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THE MALAYARAYANS OF TRAVANCORE.

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THE Malayarayans of Travancore are found in the woodlands of Thodupuzha, Meenachil, and Changanasery Taluks of the Kottayam District. They are numerically stronger in the Poonjat Edavagai of Meenachil Taluk. They were returned at the last census as 1,486 males and 1,372 females. They are fast dying down and this is partly due to their uncongenial environment and to conversions to the Christian fold.[1] Consequently, the animists of the State who were returned as 28,183 in 1901 stand at 12,687 according to the census of 1921.[2] In the words of Dr. Haddon, "These backward jungle folk have a peculiar interest to ethnologists as they appear to retain many of the customs and beliefs which characterized mankind in very ancient times; they are ethnological survivals which bear the same relation to anthropology as that borne to zoology by those generalized or persistent types dating from geological antiquity in various groups of animals that rejoice the heart of the zoologist."

The name 'Malayarayan' means "lord of the hills", and the Malayarayans claim superiority over all the other tribes in the Kottayam District in social status. For instance, they are called "Vazhiyanmar" by the Ulladans, who form another neighbouring hill-tribe. The term literally means "those who rule", and affords some lingering light on their former

1. Travancore Census Report, 1921. 2. *Cochin Tribes and Castes*, Vol. II.

sovereignty over the hills. Thus, to this day, an Ulladan calls a Malayarayan male, 'Kumaran' by the name of 'Kumaran Vazhiyan', and a female, by 'Vazhthyaramma'.

Traditional Origin.—The history of how the Malayarayans came to occupy their present habitat lies buried in obscurity. They claim to be autochthonous, and aver that their original home was at Chingapara near Karimala in the Ráni reserve and that they migrated in all directions owing to stress of population. But all the weight of tradition points to migration from north to south. It is said that the sage Agastya repaired to Dwarka (Tamil: Tuvarapati) and taking with him eighteen kings of the line of Sri Krishna, eighteen families of Vels or Velirs and others, moved to the south with the Aruvalar tribes, who appear to have been the ancestors of the Kurumbas.[3] (The Kurumbas, according to Dr. A. H. Keane, appear to be the remnants of a great and widespread people, who erected dolmens, and form one of the Pre-Dravidian tribes of Southern India[4]). There he had all the forests cleared and built up kingdoms settling all the people he had brought with him. This migration may have been about 1075 B.C.

Agastya's conquest of the south was indeed treated and accepted by all as a very well-known fact or tradition in history and it almost passed as a proverb, for Rama, the hero of *Ramayana*, when he recovered Sita after killing Ravana, compared his own feat to that of Agastya conquering the impenetrable and inaccessible southern regions.[5]

We can almost trace his footprints, as he walked from place to place in his adventurous journey to the south, for the stages of his travels are marked and punctuated, as it were, by his little 'Asramas' (hermitages) which he set up in different places in South India. Travancore has not escaped his adventures, for we find that "the Travancorean worships the ghats, particularly one of the highest peaks in them, where Sage Agastya is said to dwell and has deified their maker, Parasurama, who created Malayalam from the sea the upheaved surface of which became the ghauts".[6] This peak is known as "Agastiar Peak or the Mount Everest of our ghauts supposed to be the abode of Rishis.........".[7] "It is 6,000 feet above sea-level, and was once the seat of an observatory. It is also famous as having been the abode of Sage Agastya, a savant, physician, philologist, and theologian."[8] He is said to remain for eternity invisible to mortal eyes in the Podhiya hill near Cape Comorin.

3. M. Srinivasa Iyengar—*Tamil Studies*, pp. 45-46.
4. A. H. Keane—*Man, Past and Present*, p. 424.
5. O. C. Gangoly—*Journal of the Mythic Society*—p. 169, 1927.
6. V. Nagamiah—*The Travancore State Manual*, 1911, Vol. I, p. 11.
7. *Report on the Census of Travancore*, 1881.
8. *The Travancore State Manual*, 1911, p. 11.

The adventures of Agastya are relevant to the extent that he is said to have played a conspicuous part in reclaiming primeval forests in South India and making them fit for human habitation. The epic and puranic legends contain traditions relating to the physical characters of the aborigines (Niśadas), and would give them greater antiquity. The *Bhagavata Purana* describes the Niśada as black like crows, very low-statured, short-armed, having high cheek bones, low-topped nose, red eyes, and copper-coloured hair. His descendants are settled in the hills and forests,[9] and the Anamalai hills of Southern India form the refuge of a whole series of broken tribes. They are characterized by dark hair, short stature and broad nose. Since these physical features characterized the Puranic Niśadas and indicate their affinities with the so-called Pre-Dravidian, so I would prefer to classify the dark, short-statured, and broad-nosed jungle tribes as the modern Niśadas representing the old Niśada race.[10]

Racial Affinities.—Ethnologists consider the possibility of a Pre-Dravidian race in Southern India prior to the immigration of the Dravidians. The Deccan formed part of a vast southern continent that once extended from Further India to South-Eastern Africa and probably as far as Australia. Palæontology, geography, and geology with the ascertained distribution of living animals and plants offer their concurrent testimony to the former close connection of Africa and India including the tropical islands of the Indian Ocean.[11]

From the geographical distribution of lemurs along with some other mammals and of plants like bamboos, some naturalists have propounded a theory of the existence of a continent, which once united Australia and which Schlater called Lemuria. During the later part of Miocene times, this land was connected with Malayana. Travancore falls within the Indo-Malay region![12] Whether this hypothetical land existed or not, the present distribution of long-headedness points to a common derivation of the African, Australian, Malanesian and the aboriginal inhabitants of India. The phenomena of skin colour and hair tend to strengthen this hypothesis.

Dr. Keane points out that there is a good deal of evidence to prove that the first arrivals in India were a black people, most probably Negritos, who made their way to India from Malaysia round the Bay of Bengal to the Himalayan foot-hills and thence spread over the Peninsula, most probably in early Palæolithic times. Thrust back by immigrations of invaders, these

9. R. Chanda—*The Indo-Aryan Races*, Part 1, page 5.
10. Do. do. ,, ,, 9.
11. A. C. Das—*Rig-Vedic India*, p. 98.
12. Ernest Thackel—*History of Creation*, Vol. I, pp. 360-361 and *Travancore State Manual*, p. 118.

aborigines took refuge in the recesses of the hills and came to be known as Pre-Dravidians. At present, there are no distinctly Negrito communities in the land, but distinctly Negrito features (dark skin, short stature and flat nose) not only crop up in the uplands from the Himalayan slopes to Cape Comorin, but these uplands abound in great megalithic monuments which enable us to unravel the history of their remote past.[13]

It may be interesting to record that the Travancore hills abound in dolmens and other megalithic monuments. In his megalithic culture of Indonesia, Mr. Perry points out that, all the world over, the dolmens present such similarities of culture that they must have been the work of a people shewing a common culture.[14] Beyond Indonesia, which includes, among others, Assam and Burma, megalithic monuments are in evidence in the region of the Mundas of Chota Nagpur, the Todas of the Nilgiris, and the hill-tribes occupying the Cochin and Travancore forests.

In the tract of Malayarayans are found tumuli and vaults called Pandukuri.[15] These are dolmens. Judged by my inspection of two of them at Kaduthutti in the Ráni Reserve, they are evidently disturbed. The cap-stones have been removed in each case and are lying close by.

According to Morgan, a dolmen is a stone monument of varying dimensions composed of vertical slabs set on end with one or more slabs forming the roof. It is a burial chamber in which people of later Neolithic period buried their persons of importance.[16]

The dolmen at Kaduthutti is rectangular and is $8' \times 2\frac{1}{2}'$ in dimensions above ground. Lengthwise, it has one single upright on one side, while, at the other, two formed the walling. Sideways, there was one on each side. The flooring was also paved with stone-slabs as in France. The cap-stone is $7' \times 7' \times 8''$, and is rudely triangular. Boulders are lying about. There is only one gallery. This was found on the crest of a hill.

The geographical distribution of the dolmen offers very interesting study. It is found from the south of Scandinavia to Algeria, and from Portugal to India and Japan. The earliest dolmens are built of large unhewn blocks of stone. Lewis points out that the dolmen is not confined to one race and circles to another, but that the construction betokens a phase of culture through which many races have passed and which man developed in different localities in different ways. On the other hand, Fergussen and Eric Peet point out that megalithic monuments could not have evolved independently. Lastly, Professor Elliot Smith makes the Egyptians the

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13. A. H. Keane's Introduction—*Cochin Tribes and Castes*, Vol. I.
14. G. T. Perry—*Megalithic Culture of Indonesia.*
15. V. Nagamiah—*Travancore State Manual*, Vol. I.
16. Jaques De Morgan—*Pre-historic Archæology*, 235.

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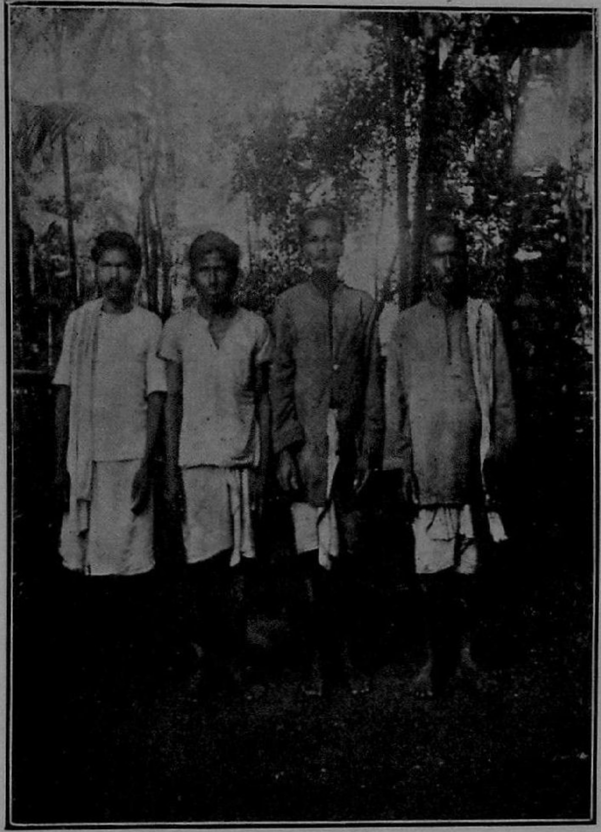
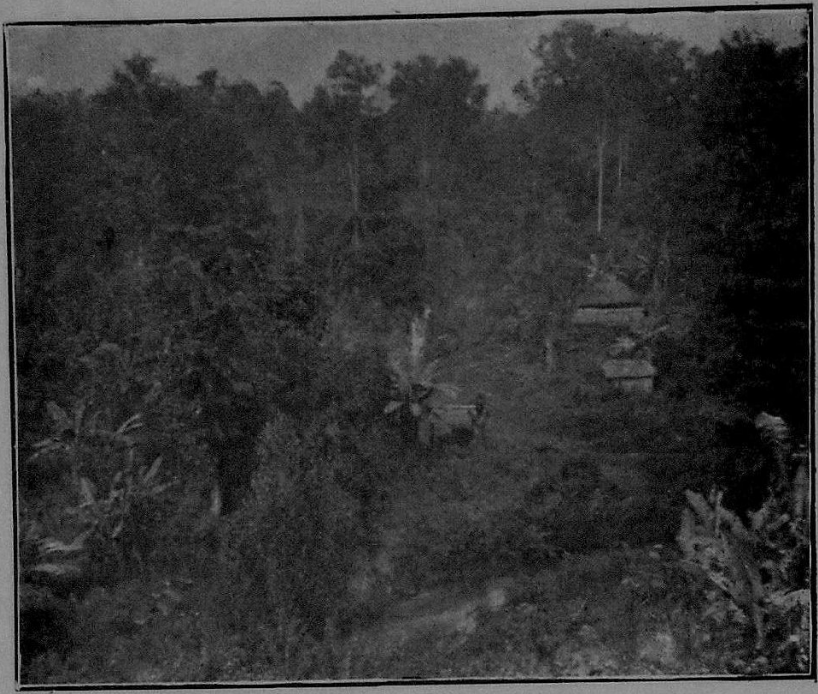


Malayarayan Male Group



A View of Malayarayan Settlement

A Dolmen with Carpston removed

transmitters of this culture all the world over at about 800 B.C., but this has been seriously questioned.[17]

Montelius points out the continuous influence of the East on the West since a period in the remote past of Pre-historic times. The dolmen-builders were Dravidian in origin according to Fergussen, but Ruggeri strikes a different note. He says that they were Vedici or Australoid in origin ; and between the Mundas of the north and the Veddas of the south, there intervene the Kurumbars, Malayarayans who represent the ancient Pre-Dravidian formation, who once extended over the whole of India and were influenced by new-comers (the Dravidians and Aryans). According to Flinders Petrie, the date of this culture may be fixed as 2500 B.C.

The Malayarayans of the present day do nòt erect dolmens, though Rev. Mateer avers that they make similar little cells of pieces of stone, the whole forming a box a few inches square.[18] The erection of dolmens is not found to flourish as a living art among them.

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17. Panchanan Mitra—*Pre-historic Archæology of India.*
18. Rev. Mateer—*Native Life in Travancore.*

HAMSASANDESA—A STUDY.

BY K. KRISHNAMACHARYA, ESQ., B.A., L.T.

(*Continued from Vol. XVIII, No. 3.*)

As for the royal splendour, we have already seen an instance of it when the Raja-Hamsa starts on his mission, with a State umbrella held over him by his steward, the wind. Another instance is seen when the Hamsa passes Tundira Mandala and enters the Chola territory. There, along the course of the Cauvery, the forests of the tall arecanut palms are sure to feast his eyes to surfeit. The very South Wind, who is but a steward of the God of Love, is seen engaged there in arranging on a gigantic scale for a royal welcome to his master. The erection of a canopy, the swinging of the chowries, the sprinkling of fresh flowers on the road, are all minutely attended to.

कुर्वन्नानाकुसुमरजसा यत्र चित्रं वितानं
पूगारण्ये मृदुविचलयन् पाळिकाचामराणि ।
पादन्यासक्षममवकिरन् क्ष्मातलं पुष्पजालैः
प्रायो वायुः परिजनविधिं पञ्चबाणस्य धत्ते ॥

As in the case of the Suvarnamukhari, there is in the description of the Cauvery another agreeable instance of the harmonious blending of the beautiful in nature with the beautiful in human experiences. The gentle flow of the river, from the foot of the Sahya Mountains into the ocean farther down, happily compares with the picture of a bride, sent from her home of birth to that of her husband, under the guidance of an aged friend, and amidst the blessings of pious Brahmins, after being duly decorated with sweet-smelling flowers by many an elderly matron interested in her.

सह्योत्सङ्गात्सपदि मरुता सागरं नीयमानां
भद्रालापैर्विहितकुशलां तादृशानां द्विजानाम् ।
यामस्कन्नास्सरसकुहळीपत्रपातैर्निशान्ते
मन्दस्मेरां मधुपरिमलैर्वासयन्तीव पूगाः ॥

The Hamsa is then directed to Srirangam, and after the usual prayers offered in the temple there, he is to cross into the territory of the Pandyas. There the Tamraparni awaits him with open arms like a lovely maiden anxiously expecting the return of her lover. That he may prepare himself for a straight flight across the ocean, he is advised to recoup the vigour of his tired wings, calmly resting himself for a time on the sands of the river,

amidst cool winds that blow kissing the crest of her waves, just as a lover loses himself in the arms of his beloved.

(शीतीभूतस्तरळलहरीबाहुसंश्लेषणेन ।)

When the Hamsa is on the wing once again, the Lord of the Ocean, in grateful remembrance of the good done to him by the sons of the Great Sagara, a renowned ancestor of Rama, may now perhaps offer him, the messenger of Rama, some places of rest on the winged mountains under his protection. This kind hospitality must be accepted and thus the host honoured, even though the Hamsa may not feel tired. That is the way of the wise.

(अश्रान्तोऽपि प्रणयमुचितं नैव बन्धोर्विहन्याः ।)

The Yaksha of Kalidasa has an intimate knowledge of every part of his city, and is really proud of it. Therefore it is that he grows eloquent in describing the splendour of Alaka, and all the channels of pleasure that are within the reach of even the humblest of her residents. But Rama has no direct knowledge of Lanka, and even if he have, he would not bring himself to describe the capital of his despicable foe in such glowing terms as the Yaksha does his own city. But he has heard much from Hanuman, and probably from other sources too, of Ravana's abuse of power resulting in the untold miseries of the divine damsels and the wives of the Lokapalas, imprisoned in his capital with an immoral intent. Therefore instead of picturing in his imagination the probable splendour of Lanka, Rama rightly dwells upon the unhappy state of these poor women whose only hope, consolation and courage are derived from the presence of Sita in their midst, alone with the power of her chastity. (उत्पश्यन्तो जनकतनयातेजसैव स्वरक्षाम् ।) We need not specially point out that the very first stanza here (लीलाखेलं ललितगमनाः etc.) is the exact parallel of Kalidasa's (विद्युत्वत्तं ललितवनिताः etc.) both in the structure of the lines, and in that of the sense.

It is a rare privilege of the human heart, not given to many, to be able to realize the pleasure of infinite confidence in the love of one's own beloved. In the lower planes love is always attended with jealousy and suspicion. Unless there is a complete self-surrender and self-effacement on either side, the course of love does always take rugged paths. A heart capable of self-surrender does not wait for the other side to move; nor does it look back when once it surrenders. The moment it finds out its object it loses itself in it, and never gets satiated. Rama's love for Sita and her love for Rama are of that ideal type. Therefore when Rama pictures in his mind the probable state of his Sita which awaits the sight of the messenger, we do not feel that his picture is in any way overdrawn. In order that the Hamsa may rightly

recognize her at the foot of the *Simsupa* tree, as reported by Hanuman, he paints an accurate picture of her personal features,

सामेद्दष्टिश्शफरनयना सन्नतभ्रूस्सुकेशी ।
तन्वीतुङ्गस्तनभरनता तप्तजाम्बूनदाभा ॥ etc.

These lines cannot but bring to the reader's mind the similar lines from *Meghasandesa*,

तन्वीश्यामा शिखरिदशना पक्वबिम्बाधरोष्ठी ।
मध्ये क्षामा चकित हारिणी प्रेक्षणा निम्ननाभिः ॥ etc.

The former are as good as the latter in their form; but there is a special weight attached to the original which cannot in justice be claimed by the reflection.

At the time of the messenger's approach, Sita will perhaps be engaging herself in any of those occupations which are, in the words of Kalidasa, प्रायेणैते रमणविरहेष्वङ्गनानां विनोदाः । She may perhaps be addressing birds in the belief that they may in their distant flights happen to meet her Rama; or she may be looking in the direction of the North, expecting every moment the arrival of her Lord, as assured by Hanuman; or she may be innocently asking her jewels if they remembered her lord's personal contact with them; or she may be picturing to her mind, by way of a happy memory, the secluded enjoyments of pleasure always at their service, when she and her Rama were inseparable and unseparated.

The messenger will perhaps see her in her afflicted state, like—

शुद्धामिन्दोः श्वपचभवने कौमुदीं विष्फरन्ती-
मानीतां वा विषतरुवने पारिजातस्य शाखाम् ।
or सूक्तिं रम्यां खलपरिसरे सत्कवेः कीर्त्यमानां ;
वर्षाकीर्णामिव कमलिनीं, व्याहतार्थामिवोक्तिं,
पङ्काश्लिष्टामिव बिसलतां, पत्यपेतामिवेभीम् ।
मेघच्छन्नामिव शशिकलां, विघ्नरुद्धामिवाशां,
व्याघ्रोपेतामिव शशवधूं, भूतले ज्यामिवास्ताम् ॥

In that state of captivity, she may probably be in a reverie, shutting out all external actions of the senses and concentrating her mind upon her Rama, that she may dream of him and lightly pass her heavy moments. In the like situation Kalidasa's Yaksha requests his friend to bide for a time(याममात्रं सहस्व) lest he should disturb, by his inadvertent approach, her dream picture of a hearty embrace of her lord.

माभूदस्याः प्रणयिनि मयि स्वप्नलब्धे कथञ्चित् ।
सद्यः कण्ठच्युतभुजलताग्रन्थि गाढोपगूढम् ॥

After discovering Sita at the foot of the tree, the Hamsa is enjoined to await the time to disclose himself to her. For, in the words of Valmiki,

(निशाचरीणां प्रत्यक्षमनर्हं चापि भाषणम्); and in our author's (निद्रासमयमुचितं वीक्ष्य नक्तंचरीणाम्), he has to deliver the message. The Rakshasis generally sleep in the day, and the Hamsa is therefore to spend the night in one of the neighbouring tanks. With the cool winds of the early morn, he has to make himself ready for the discharge of his sacred duty, after sufficiently refreshing himself by the energizing sleep overnight.

The message or the *Sandesa* is the crowning item in the *kavya*. And as such it must be hearty and must be couched in the language of the heart. The physical words conveying it must necessarily be श्रोत्रपेय as directed by the originator of this type of *kavyas*. What else can be more hearty here than an actual picture of Rama's sufferings and wailings in actually hearing of and then realizing the sudden loss of his beloved Sita? Lovers divine each other's sufferings during their periods of separation. The immortal Valmiki has, in his own inimitable style, recorded those unhappy moments and the still more unhappy and pitiable agonies of Rama in the Dandaka forest, soon after his dear Sita was mercilessly snatched away from him. Instead of drawing upon his own imagination as does Kalidasa, Venkatanatha has amply made use of the ready-made material available at hand. As we have already inferred, his very purpose is to popularize some of the best thoughts of Valmiki. A sense of appreciation of the beautiful elsewhere, coupled with a desire to share with others the discovered beauty, and a humble suppression of the self before what is honestly believed to be more sublime have perhaps made Venkatanatha adopt the course he actually did. But to proceed:

To make his presence known to Sita, the Hamsa is directed to softly sing the praises of the two families of Dasaratha and Janaka. This was exactly what the earlier messenger Hanuman did. And when her attention is drawn, he is to announce himself as the trusted envoy of her lord, and as one who generally indicates the approach of the season of *Sarat*, when alone great heroes commence their military marches into enemy territories.

शूराणां यश्शरदुपगमे वीरपत्नीवराणां ।
सन्मानार्हं समयमुचितं सूचयेत्कूजितैस्स्वैः ॥

......Such an announcement is expected to keep up the drooping spirit of Sita, in the hopes of her lord's impending approach. A similar advice is offered to the messenger in the sister poem. There he has to announce himself to the lady as—

योबृन्दानि त्वरयति पथि श्राम्यतामध्वगानां ।
मन्द्रस्निग्धैर्ध्वनिभिरबलानी विमोक्षोत्सुकानि ॥

That heroes generally commenced their military marches after the rainy season was a fact mentioned in all works on Indian polity. Even in the *Ramayana*,

it is prominently mentioned. Apprehending that Sugriva may have slept over his promise of assistance, Rama reminds Lakshmana of the approach of their time of action, saying—

अन्योन्यबद्धवैराणां जिगीषूणां नृपात्मज ।
उत्साहसमयस्सौम्य पार्थिवानामुपास्थितः ॥

Announcing himself in the way instructed, the Hamsa is first to inform Sita of her lord's well-being, and then alone make his query after hers.

भवती भागधेयेन जीवन् ।
कल्याणीं त्वां कुशलमनघः कोसलेन्द्रोऽनुयुंक्ते ॥

For, when once she is certain of her lord's welfare, she will have the necessary courage and patience to hear the message through. There is no touch of self-importance in Rama, when he thus instructs his messenger; on the other hand, there is an amount of self-effacement here, because all this punctilious care for the very minute details of the mode of delivering the message only discloses his anxious concern for Sita. The earlier messenger did the same. Said he—

वैदेहि कुशली रामस्त्वां च कौशलमब्रवीत् ।

It was before the commencement of the Spring season (*Vasanta*) that Rama was deprived of his beloved. Now it is the Autumn (*Sarat*). All these seasons his sufferings have been acute. In the *Vasanta*, though he was himself in an abject condition, he felt more for Sita. And what he did then now forms an item of the message. To the *Vasanta* he prayed then with folded hands and bended knees, not to visit the lands where Sita was.

सीतापार्श्वे न भवतु भवानित्यवोचद्वसन्तं ।
रामस्त्रासादनमितधनुर्मौळिना सन्नतेन ॥

In the *Ramayana*, Rama simply trusts in the good sense of *Vasanta* that he would not be where Sita is.

नूनं न तु वसन्तोऽयं देशं स्पृशति यत्र सा ।
कथं ह्यसित पद्माक्षी वर्तयेन्मा मया विना ॥

But here he does not so trust and therefore is his abject prayer. This is indeed a finer conception.

In moments of acute agony, Rama placed himself unwittingly in the path of the cruel South Winds without realizing the dangerous effect thereof; but his dear Lakshmana stepped in and kept him from such exposures (वारितो लक्ष्मणेन). A parallel instance where Lakshmana comes to his succour is seen in the *Raghuvamsa*. When Rama, in his almost insane condition, mistakes a creeper for Sita and ventures to embrace it, Lakshmana holds him back, with tears in his eyes (सौमित्रिणा साश्रमहं निरुद्धः ।).

Another item of the message is Rama's perplexity as to what he should say to Janaka when questioned about his daughter, and how the aged king would feel on learning the truth. The *Asoka* with its red flowers and the *Kurunja* with its white ones had reminded him of the *Laja-homa* in his marriage offered in the sacred flames of Agni; hence the thought of Janaka had been uppermost in his mind, in those days when Sita's whereabouts could not be known.

मन्दो वक्ष्ये किमिति जनकं किन्नु योगीश्वरो माम्। etc.

This very thought haunts Rama, even in the *Ramayana*, in more than one place. And he says to Lakshmana—

निवृत्तवनवासश्च जनकं मिथिलाधिपम् ।
कुशलं परिपृच्छन्तं कथं शक्ष्ये निरीक्षितुम् ॥

....

किन्नु वक्ष्यामि राजानं धर्मज्ञं सत्यवादिनम् ॥ etc.

These thoughts are quite natural and appropriate, at a time when Sita's whereabouts are not known. They naturally find a conspicuous place in the message now to be sent to Sita.

Next he tells her how, on the approach of the rainy season, he envied, in his pitiable plight, the happiness of the peacock always in the company of his hen, with no fear of a disturbance from the hands of a Rakshasa.

(रक्षः पीडारहितदयिताश्लेषधन्यो मयूरः ।)

So too in the *Ramayana*,

मयूरस्य वने नूनं रक्षसा न हृता प्रिया ।
तस्मान्नृत्यति रम्येषु वनेषु सह कान्तया ॥

In his sufferings, Rama has one consolation to keep up his heart. He can at times experience a feeling of nearness to his beloved, though far apart physically, because he realizes that he is being united to her by several common links.

देहस्पर्शं मलयपवने दृष्टि संभेदमिन्दौ,
धामैकत्वं जगति, भुविचाभिन्नपर्यङ्क योगम् ।
ताराचित्रे वियति विततिं श्रीवितानस्य पश्यन्
दूरीभूतां सुतनुविधिना त्वामहं निर्विशामि ॥

But Kalidasa's Yaksha is denied this pleasure-giving consolation. Though he sees the likeness of the several limbs of his love in different objects, his bitter complaint is that he cannot see them all in one place and thereby feel her presence by him.

(हन्तैकस्मिन् क्वचिदपि न ते चण्डिसादृश्यमस्ति ।)

Rama is more fortunate in that he can attune his mind to a sense of enjoying

the company of his beloved, whenever he sees the sameness of an object with which both of them have some kind of physical contact.

The greatest of all his anxieties is that she, who willingly followed him into the forest, is now far away, instead of securely lying in his arms.

तातादेशात्सपदि भरते न्यस्तराज्याभिषेकं
यामामेका वनमनुगता राजधानीं विहाय ।
तामेवत्वामुचितशयनां बाहुमध्ये मदीये
दूरे कृत्वा गुणवति मुहुर्दूयते जीवितं मे ॥

It may be noted that in this verse Venkatanatha adopts to a certain extent the very words of Valmiki :—

यामामनुगता मन्दं पित्रा प्रव्राजितं वनं.......... ।
तया विहीनः कृपणः कथं लक्ष्मण धारये ॥

Finally Rama gives re-assuring hope to Sita that he is close on the heels of the messenger at the head of an army of monkeys, and that Lakshmana will please her ears by the twangs of his bow-string, while engaged in a fight with the Rakshasas.

अल्पीयोभिस्सुमुखि दिवसैर्योधयन्यातुधानान् ।
कर्णे शीधुं तव रचयिता लक्ष्मणश्चापघोषैः ॥

Almost the same message was conveyed to her by Hanuman, where too Lakshmana had a prominent mention—

क्षिप्रं द्रक्ष्यसि राघवम् ।
लक्ष्मणं च धनुष्पाणिं लङ्काद्वारमुपस्थितम् ॥

Lastly comes the promise of several kinds of enjoyments in store for them (enjoyments which either of them has been picturing in their dreams or hopes) when once they return home and ascend their hereditary throne—

सिद्धारम्भौ सपदि भवतामाधिराज्याभिषेकात् ।
संप्राप्स्यावश्चिरविरहतस्सञ्चितान्देवि भोगान् ॥

And the Yaksha too extends a similar promise to his beloved in Alaka.

पश्चादावां विरहगुणितं तं तमात्माभिलाषं ।
निर्वेक्ष्यावः परिणतशरच्चन्द्रिकासु क्षपासु ॥

That the genuineness of the message may not be doubted by her, Rama entrusts the messenger with a secret incident that took place between them, when he returned home victorious from his battle with Khara and Dushana. So does the Yaksha, by entrusting to the messenger an incident of a dream where his beloved thought she had caught him misbehaving.

Rama has no doubt that the Hamsa will discharge faithfully his mission, though he does not see anything like a visible response from the bird. For,

it is a well-known fact that one of his ancestors helped the King of Nishidas by a similar act of mercy.

प्रागप्येवं परिणतगुणां नैषधे वीक्ष्य वार्ता ।
मार्तत्राणं व्रतमिति विदुर्हन्तशुद्धात्मनां वः ॥

And the Yaksha too has a like faith in his messenger and satisfies himself that,

निश्शब्दोपि प्रदिशसि जलं याचितश्चातकेभ्यः ।
प्रत्युक्तं हि प्रणयिषु सतामीप्सितार्थक्रियैव ॥

Rama then discharges the Hamsa with a touching benediction—

स्वैरं लोकान् विचर निखिलान् सौम्यलक्ष्म्येव विष्णुः ।
सर्वाकारैस्त्वदनुगुणया सेवितो राजहंस्या ॥

But the benediction of the Yaksha does not take this positive form. It is framed in the negative, and hence more forceful, we should say. Feeling keenly, as he does, the pangs of separation, the Yaksha does not wish for a similar experience in the case of his friendly messenger. And so he prays—

माभूदेवं क्षणमपि च ते विद्युता विप्रयोगः ।

Before we close we should like to touch upon what we consider to be the peculiarities of grammar, not to say irregularities, employed by Venkatanatha in about half a dozen places in the *Hamsasandesa*. Great poets have always taken such liberties with the language—liberties most of which the existing rules of grammar cannot countenance with anything like favour. And all such usages have gained, in spite of the grammarian, a force, and have become current in the language, recognized as the usages of great poets (महाकविप्रयोगाः). The great Panini himself is reported to have taken such a liberty in a few places of a *kavya* attributed to him. And Kalidasa himself has some usages to his credit. In his *Meghasandesa* he has used in one place देवपूर्वं गिरिं ते (I-42) on the lines of a similar use in the *Raghuvamsa* दशपूर्वरथं यमाख्यया. In the latter the usage is justifiable, because it refers to a *name* and not an object denoted by the words. But in the *Meghasandesa* it is the *object* देवगिरिः and not the name देवगिरि that is spoken of. Even Mallinatha is obliged to admit that the usage cannot be maintained. Therefore there is nothing repugnant when we collect in one place such peculiar usages of Venkatanatha. Only they are a little more numerous than Kalidasa's. Learned commentators like the late Parakalaswami of Mysore have amply justified one and all of these usages. We shall enumerate here the few instances of the grammatical peculiarities and liberties in the *Hamsasandesa*.

(*a*) तीर्थे पुंसां शमितकलुषे (I-30).

Here पुंसां refers to कलुषे and not to the whole compound शमितकलुषे. The defect here is known as एकदेशान्वयः. Another such use is in I-39.

(*b*) युग्मं नेयैर्दिवि सुमनसां सेव्यमानं विमानैः (II-6).

Here नेयैः is an adjunct of विमानैः, the *agent* of the action denoted by the root नि in नेयैः. Generally the suffixes य, अनीय and तव्य do refer to the *object* of the action denoted by the roots to which they are attached, or simply denote the *state* of action. One of the explanations offered is नेयैः—किङ्करैरिति शेषः; thus making विमानैः the secondary object of the action नि, the primary one being युग्मम्.

(*c*) कमलमुकुळे लीयतां षट्पदानां (II-26).

There are three roots ली (श्लेषणे), ली (द्रवीकरणे) and लीङ् (श्लेषणे) which have the present participle genitive plural forms लीनतां, लयतां, and लीयमानानां only. One commentator has taken the easier course of reading in the text लीनतां; another has taken it as a verb in the imperative third person singular form, agreeing with the subject भवान्— a far-fetched construction—resulting in an unjustifiable break of the sentence.

(*d*) वदनकमलं मन्दमुन्नम्य भीरुः (II-29).

This is an adaptation from Valmiki उन्नम्य वदनं भीरुः शिंशुपावृक्षमैक्षत. One would expect the explicit causal form उन्नमय्य। Valmiki's usage is classed under आर्षप्रयोगाः। Scholars justify this as an Implicit Causal.

(*e*) कुसुमधनुषः चित्रपुंखैः (II-35).

Generally the word धनुः takes the form of धन्वन् in a बहुव्रीहि compound, according to Panini (धनुषश्च ॥ V-4-132); but he himself has provided for an exception to the rule (वा संज्ञायाम् ॥ V-4-133) which makes the अनङादेशः optional, when the compound signifies a name.

(*f*) रामस्त्रासादनमितधनुः (II-35).

One would expect अनमितधन्वा ordinarily. But here धनुः is said to be not the usual षान्त word in the neuter. It is in the masculine, and of उकारान्त—a rare instance. The oft-quoted illustration justifying the usage is धनुर्वंशविशुद्धोऽपि निर्गुणः किं करिष्यति.

We have thus studied, in sufficient detail, Venkatanatha's *Hamsasandesa* as compared with Kalidasa's *Meghasandesa*. And in the course of our study we have seen how far he is indebted, on the one side, to Kalidasa for the plan of his work and also for the details of ornamentation in a few instances; and on the other, to the great Valmiki for several ideas embodied in the poem. We have also seen with pleasure the play of his own imagination in not a few places. While judging of a work, the author must be kept in the background, and the merits and the demerits of the work must be impartially weighed and the final value determined. Judged only in regard

to its language and its poetic worth, the *Hamsasandesa* can easily take a rank almost equal to the *Meghasandesa*. (We have given copious extracts in this study to enable the reader to judge for himself.) But taken on the whole, it can only be ranked subordinate to Kalidasa's, for reasons already detailed in the initial pages of our study. But that is no discredit to the author. Having to his credit over a century of works, philosophical and literary, Sri Venkatanatha has his name only enhanced by his exquisite *Hamsasandesa*.

THE HINDU ARABIC NUMERALS.

By A. A. Krishnaswami Ayyangar, Esq., M.A., L.T.

CHAPTER I.

The Ancient Numeral Systems of the World : General Principles.

A study of the early history of any branch of knowledge often throws light on many points which are apparently inexplicable and mysterious in the fully developed state of the subject presented to us in modern times. The modern decimal notation with its place-value scheme and its symbol for zero has passed through several vicissitudes at different times and in different lands before it attained its present simplicity, beauty and inevitableness, which conceal remarkably the intellectual throes endured and ineffectual circuitous paths gone through in the course of its inception.

Omitting the pictorial stage in which the picture of a thing was repeated as often as was required to represent its number, we shall take up the thread of development of the early representations of number at the symbolic stage, when strokes, vertical or horizontal, or a combination of both, began to be used. From very early times the fingers have served as a common aid to reckoning in groups of five and ten in almost all the countries of the world and have even suggested symbols for the representation of the fundamental numbers (1, 5, 10). Thus we have the stroke 1, suggested by the raised finger, used to denote unity by almost all the nations (Egyptian, Attic, Roman, Hindu and Chinese) of antiquity and the symbols V and X in the Roman notation suggested respectively by the hand with four fingers close together and thumb extended and the two hands interlinked together.

For representing intermediate numbers, *i.e.*, the numbers between unity and the group-numbers 5 and 10 two principles were devised, *viz.*, that of repetition and adjunction of symbols. But repetition soon reached its limit on account of the ocular incapacity to recognize immediately without counting the number of repetitions beyond (say) four; in some of the ancient notations such as the Babylonian where such repetitions were allowed upto nine, a suggestive form of arrangement was devised.

For example, in the Babylonian * symbol[1] for 89, the symbol for ten is repeated eight times and in two columns of four symbols each and the symbol for unity nine times and represented in three columns of three symbols each ; in the Attic and Roman notations, however, as well as in the Chinese and

* For the symbol, *vide* Appendix. For convenience of printing, all the symbols used in this paper are collected in the Appendix and numbered.

the Hindu, no symbol was repeated more than four times (occasionally five).

The practice followed in adjunction of symbols has been uniformly among all the early civilized nations of the world to write the number of higher denomination before one of lower denomination, according to the direction of the script in use.*

In fact, in the Hebrew notation [2] found on coins, the symbol for any number of higher denomination is written before one of lower denomination, since naturally in a right-to-left script, the symbol on the right is written before that on the left. We are also told that the folios in 'Tabula Registri de Visitatione Maneriorum per Robertum Decanum annodomini MCCXXII, given by Hale (Domesday of St. Paul's)† are numbered with Arabic numerals written originally from right to left, the numbers being afterwards struck out and a fresh series written in nearly the same character but from left to right; again in one of the manuscripts of the thirteenth century, ‡ the first thirteen quires are numbered "I", "II" .... "XIII" on the last page of each quire; then come 410 (=14), 510 (=15), 610 (=16) and so on.

Among nations like the Greeks and the Hindus writing the left-to-right script, the number of higher denomination is always placed to the left of that of lower denomination being written prior to it.

Examples of these are found in the Roman Notation[3], in the Attic[4] and Tamil notations[5], and in Nanaghat[6] inscriptions; whereas the notation in Kharoshti[7] numerals, (in use in N.-W. India in early times) is in keeping with the Kharoshti script which is written from right to left.

In the Egyptian notation, however, the numbers could be written either way, *i.e.*, from right to left or left to right, and in the former case the symbols were turned in the opposite way.

Whenever the above principle of adjunction is apparently violated in any numeral system, such adjunction has either a subtractive or a multiplicative significance. In Roman notation, as is well-known, a symbol preceding a higher one is to be subtracted, *e.g.*, $CM = -100 + 1000 = 900$. In the Hindu notation a symbol preceding a higher one multiplies it and thus has an adjectival force, as in the Tamil[8] notation; in the Kharoshti[9] system, the symbol of lower denomination coming to the right and thus preceding the other symbol in the right to left script, multiplies the symbol of higher denomination.

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* Many critics who speculate upon the origin of the modern notation forget this important fact that the terms 'before' and 'after' are always relative to the script in use.

† Quoted by G. F. Hall, on page 16 of his *Development of Arabic Numerals in Europe*, Oxford, 1915.

‡ P. 38. *Ibid.*

In the Babylonian[10] system, again, we have, similarly multiplicative adjunction. Sometimes the symbol with a multiplicative significance is written under or in close conjunction with another symbol ; examples can be cited in the Attic[11] notation and in the Nanaghat[12] cave-numerals.

For representing intermediate large numbers the principles of the right and the left adjunctions as well as conjunctions are combined with that of repetition ; examples are to be found in the Tamil[13] notation and in the Chaldaean[14] notation.

Even such a scheme as the above in which position plays a significant role, was not capable of representing large numbers in a compact and elegant form suitable for purposes of keeping accounts, etc., and so, another system of notation began to spring up soon.

According to T. L. Heath, the Greeks had the happy inspiration to conceive the original idea of using the letters of their alphabet for denoting the numbers of units, tens and hundreds that could occur in any number from 1 to 999. But before the Greeks, the Hebrews had possessed a system of numeration (about 500 or 600 B.C.) in Asia Minor, practically identical with the Greek alphabetic numeral system, and as we shall see later on, it was in the hands of the Hindus that this kind of notation was not only utilized to its fullest extent but a literary turn also was given to it. This Greek or Hebrew notation is to some extent similar in principle to the Brahmi notation in India as may be seen from the parallel examples in the Greek[15] notation and in the Brahmi[16] notation.

For expressing higher numbers the same alphabetic symbols were used (on a principle of periodicity) with such distinguishing marks[17] as dots, dashes, or bars placed over them to denote the number of thousands, etc., thus anticipating to some extent the use in the modern notation of the same symbol to denote different values according to position. Though position is not essential in this notation yet it follows the principle of placing the higher number before the lower as in the earlier iterative and additive notation. The thing that spoiled it was the use of separate symbols for tens and hundreds, which increased the strain on the memory though it led to as compact a representation as in the modern system.

There is a third system of notation known as the Babylonian sexagesimal system which also came so near to the modern one in the notion of positional value but diverged from it in the adoption of such a large base as 60 for numeration and in its failure to recognize the importance of the use of a symbol for zero. In an article by Cajori in the *American Mathematical Monthly* (January 1922) there is a reference to a Cuneiform Tablet (supposed to be as old as 2000 B.C.) which reveals the Babylonian operations with

sexagesimal fractions similar to modern operations with decimal fractions. But the Babylonians had no mark to separate the fractional from the integral part, which was a serious defect. Thus the number 44 (26) (40) could be interpreted in an infinite number of ways and the correct interpretation could be judged only from the context.

It is believed that in this notation a sign was occasionally (not consistently) used to indicate a gap or the absence of any group or class; but it was not a part of the numeral system nor was it used in calculation. The Omicron '0' of Ptolemy was also not used as a regular zero but merely to represent blanks in sexagesimal fractions. It is a speculation of some historians of mathematics that probably with the introduction of the Babylonian sexagesimal fractions into India, passed also the principle of local value and the restricted use of the zero.

There was a kind of positional notation in vogue also among the Chinese[18] who used one set of numerals in the odd places and another set in the even places. In the Sun-Tsu Suan-Ching (of the first century A.D.) the arithmetical classic of Sun-Tsu we read, "In making calculations we must first know positions of numbers. Unity is vertical and ten horizontal; the hundred stands while the thousand lies; and the thousand and the ten look equally and so also the ten thousand and the hundred."

From the above brief survey it is evident that the different early systems of notations obtaining in different parts of the world contained the germs of the principle of the modern notation which was destined to develop in India where all these various strata in the growth of the notation are to be seen in a peculiarly indigenous form naturally leading to the place-value and the zero. What made the Greeks and the other nations who came so near the modern principle miss it is, in the present writer's opinion, their heterogeneous numeration which reckoned first in powers of ten upto one thousand and then in powers of one thousand, instead of regularly reckoning like the Hindus in successive powers of ten (एक, दश, शत, सहस्र, दशसहस्र, लक्ष, ...).

CHAPTER II.

The Development of the Numeral Systems in India: The Kharoshti and the Brahmi Numerals.

There were four different kinds of numerals in use in India from early times, *viz.*, the Kharoshti, the Brahmi, the symbolic word notation, and the alphabetic notation, before the decimal notation sprang up with the nine symbols and the zero. In this chapter, we shall describe the first two kinds which alone have some relation to the problem of the supposed Arabic origin of the modern numerals.

The Kharoshti * script which was in use in the North-West of India, was written from right to left and the Kharoshti numerals following the direction of the script were written, according to the usual practice, with bigger elements before (*i.e.*, to the right of) the smaller ones. These numerals occur in the so-called Saka inscriptions as early as the first century B.C. The fundamental signs are—

(i) one, two, three vertical strokes for 1, 2, 3 respectively.

(ii) an inclined cross[19] for 4.

(iii) a symbol[20] for 'ten'.

(iv) a cursive combination[21] of two tens for twenty.

(v) a sign resembling the Brahmi symbol with a vertical[22] stroke to its right for 'one-hundred'.

In this notation, unlike the Egyptian, not more than three repetitions are allowed of any symbol and a new symbol always springs up to avoid the fourth repetition. Thus '8' is represented by two four's[23]. A separate symbol[20] introduced for '10' and another[21] for '20' facilitate the writing of the numbers from 10 to 99, while the symbol[22] for '100' containing a multiplicative symbol on the right is necessary for representing numbers of three digits. The common principles underlying the structure of this notation and the Aramaic notations are so general that they could have suggested themselves to any one nation independently of another, while at crucial points, differences as well as similarities are noticed which make the theory of the ultimate Phœnician origin dubious. Julius Euting's Tables of the ancient Aramaic numerals have the Kharoshti symbols for 4 and 20 but the symbols for 10 and 100 are different. As regards the symbol for 4, even Bühler thinks it probable that both the Hindus and the Semites independently invented the cursive combination of the original four strokes.

Thus the Kharoshti numerals with their additive and iterative principles appear to be the first stage in the growth of the Hindu notation, corresponding to that of the ancient Egyptians and Babylonians. They are soon absorbed in and superseded by the more refined Brahmi notation in which one may hope to find the ancestor of the modern numerals.

The Brahmi notation is the most important of the early Hindu notations. There are several theories of its foreign origin, but none convincing enough. Some fragments of these numerals[24] occur in Asoka's Edicts as early as 300 B.C., and these are probably the earliest forms of our modern symbols. They reappear in the Nanaghat cave inscriptions of the second century B.C.

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* The term 'Kharoshti' means literally 'one having the ass's lip' and therefore the notation may be either the invention of a sage with the ass's lip or the notation current among barbarians contemptuously termed by the Aryans as those having the ass's lip.

The inscriptions in the rock-cave up the Nanaghat hill contain 'a list of gifts made on the occasion of the performance of several yajnas and in naming the gifts, a kind of numerals is used differing in character from those hitherto found in West Indian Caves '.* To the perseverance of Pandit Bhagavanlal Indraji, whom Prof. E. J. Rapson refers to as the great Indian scholar whose memory is preserved in the British Museum by the shield which records his munificent bequest, we owe the copying and the elucidation of these cave inscriptions, which, though more or less obliterated, contain numerals in no less than thirty places. Some symbols[25] are the same as in the usual cave inscriptions; while others[26] resemble the figures found in the Nasik caves; the symbol[27] for '80' is the same as the one found in the coins of Virdama and Vijaya Simha Kshatrapa of Sourashtra; the symbols[28] for 100 and 1,000 are new; higher numbers are formed on the principle of multiplicative adjunction noticed to some extent in the Kharoshti notation; the smaller element occurring to the right of a bigger one forms a ligature[29] with it to denote the product of the two elements.

Regarding these Nanaghat symbols, Mr. Kaye says that they cannot be said to be well-established; for Bhagavanlal's interpretations of them are based on his *Akshara* theory which is not now generally accepted, and the abnormal symbols for 100 and 1,000 are not confirmed by any other sound examples.

The next evidence of the Brahmi numerals, we have in the Nasik cave inscriptions[30] in which the principle of the right adjunction of the smaller unit, as in Kharoshti numerals, with a multiplicative significance, is evident.

For further examples of the use of these numerals, the reader may consult E. J. Rapson's *Catalogue of the Coins of the Andhra Dynasty*, W. Kshatrapa, etc. (1908).

From the above description it may be evident that the Brahmi numerals belong to a non-place value system and have only a limited scope since they cannot represent large numbers. There is also some analogy with the Greek alphabetic notation in the fact that there are separate symbols for the different multiples of unity, and ten; unlike the Greek notation, the symbols for multiples of 100 and 1,000 are formed on the principle of multiplicative adjunction. The idea of representing any number less than 10^n by 9^n or less symbols (n being any integer) is such a fundamental one that it could have suggested itself independently to any intelligent nation and it is obvious that the Hindus who managed with 20 primary symbols the representation of all numbers less than 10^5, could not have obtained any suggestion from the

* *Vide* Pandit Bhagavanlal Indraji's article entitled "On Ancient Nagari Numeration from an Inscription at Nanaghat", *Journal of the Bombay Branch of Royal Asiatic Society*, 1876, Vol. XIII, p. 404.

Greeks for this kind of notation. (*Vide* G. H. Ojha's *The Palæography of India*, pp. 103, 114.)

The first four symbols of the Brahmi notation are apparently derived from the corresponding symbols of the Kharoshti numerals by turning them through an angle, a frequent process in the transformation of numerals, easily accounted for by the psychological fact* that the primitive or the less developed minds cannot recognize the configuration and orientation of a symbol as an essential feature of the notation. According to Kern, the device of indicating the number 4 by a cross is so natural and ingenious at the same time that any comment on it may be superfluous, and all the latter forms of '4' are off-shoots of this ancient sign. But Mr. G. R. Kaye doubts this conclusion, since all the early examples except one are markedly differentiated from it. He does not believe in the derivation of 5 from 4 and, indeed, he says that no principle of formation of the symbols from 4 to 30 can, at present, be offered ; but possibly the symbol for '40' is derived from that for '30' by the addition of a stroke, while the 'sixty' and 'seventy' as also 'eighty' and 'ninety' appear to be connected similarly. He also gives us a warning that the principle of formation in this case appears more marked in the later symbols and we must be careful about forming any definite conclusion as to the origin of the system from such evidence.

There are several theories regarding the foreign origin of the Brahmi numerals. For instance, Bayley assumes that the Hindus must have borrowed from four or five different, partly very ancient and partly modern, sources ; and Burnell points out the general agreement of the principles of the Indian system with those of the Demotic notation of the Egyptians and comes to the provisional conclusion that the South Indian Asoka system is derived from the Egypto-Phœnician system of numerals ; Bühler and Barth concur in Burnell's view. In this connection Pandit Bhagavanlal Indraji's *Akshara* origin of the numerals deserves mention, which, if accepted, would show that the numerals were a purely indigenous development. We are told that the books of the Nepalese and the North Jains have their pages numbered by a singular series of letters.

ए 1	ख 4	ग्र 7	ॠ 10	
द्वि 2	तृ 5	ह्न 8	थ 20	शु or शू 100
त्रि 3	फ्र 6	ओ 9	ळ 30	

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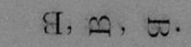
* In teaching children of about 5 years to write the letters of the alphabet, I have often met with such inversion of the letters, for example a child may write 'B' in any one or all of the following forms :— 

The origin of this kind of notation is still obscure though there are curious survivals of its usage even in modern times (*vide J. R. A. S.*, 1896, C. Bendall's article: 'On a System of Letter-Numerals used in S. India'). The Pandit, observing some points of similarity between these *Akshara* numerals and the Brahmi symbols formulated his famous *Akshara* theory; but it has been rejected by Burnell, though partially accepted by Bühler. According to Bühler, the signs have certainly been developed by Brahmanical schoolmen, since they include two forms of उपध्मानीय which, without doubt, have been invented by the teachers of the Siksha.

Besides the above there are other conflicting theories which are as fanciful as they are absurd. While it is believed that several eastern nations have invented independent systems of numerals of their own, why should we seek, in vain, to find an extraneous origin for the Indian numerals alone and get landed in unsatisfactory hypotheses? The very fact that, of the scores of hypotheses that have been trotted out to trace them to a foreign source, none have come anywhere near the truth is sufficient proof to show that no such foreign source really exists. Whatever be the origin of these symbols, the symbols, as they were, had no special virtue in them, (that one should attempt to trace them to a foreign source and thereby to deny the credit of invention to the Hindus), except for the fact that the zero symbol came to be introduced into it later on and that the modern place-value system developed in it absorbing nine of its symbols and rejecting the rest.

The Brahmi symbols are the ancestors of the so-called Arabic numerals. It does not, indeed, require so much imagination to perceive the resemblance between them and the modern numerical symbols* as to derive them from the Greek or Arabic forms which have sometimes to be turned round or turned over or even distorted so that they may lead to the modern symbols. In a recent article (by an F. R. S.) in the *Mathematical Gazette*, July 1925, we read such statements as the following; many of these are quite untrue being probably based on such authorities as Mr. Kaye.

" Moreover recent research has thrown some doubt on the antiquity of Indian mathematics. The evidence on which we largely depend in this connection is a Hindu treatise on Astronomy called the *Surya Siddhanta*, which was probably composed in about A.D. 500 and which seems to have derived a great deal from the Alexandrian school.

There is no necessity to suppose that the Arabic numerals were derived from the Greeks through the Hindus. They may well have arisen in the Near East itself.

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* *Vide* the Brahmi symbols and the modern symbols given in parallel columns in the Appendix numbered (30).

After the collapse of the Roman Empire, the Arabs inherited the scientific traditions of Alexandria and there is no doubt that they must, through the writings of Ptolemy and others, have been made familiar with the Greek numeral symbols.

Now it is very remarkable that these symbols (at any rate as regards 6, 7, 8, and 9) bear a singular resemblance to the corresponding Greek letters.[31] Thus, the late forms of Vau (capital and cursive) are ' C, S ' and the latter is almost identical with the sign for ' 6 '..................4 is a serious difficulty. It is true that there is an old form[32] which leads at once almost to 4; but unfortunately, the intermediate forms do not bear this out. An early Indian symbol is one[33] which does look like a four stroke symbol; this becomes in later Indian script ४, whose variants are the Arabic symbol[34] and the European twelfth century symbol.[35]

But the decisive argument is really supplied by the *zero*. This is absent from the early Indian scripts, or else zero is denoted by a dot. On the other hand, we have definite evidence that ' 0 ' is used to denote zero in Ptolemy's Almagest which the Arabs had thoroughly mastered.

If this argument is correct, the Arabic numerals have really been derived from the Greek alphabetic numerals * by omitting the separate signs for tens and hundreds and by importing three new signs for 1, 2, and 3.

In attempting to trace the source of the modern numerals, it is futile to associate them, on account of some fancied resemblance, with the notations developed in countries like Greece, Asia Minor or Arabia, where there was no such indigenous systematic development of positional value nor any systematic use of the zero as we find in India. The story of the parallel development of a positional notation in India, alongside of the non-positional one, we shall consider in a separate chapter.

CHAPTER III.

The Development of the Numeral Systems in India: The Symbolic Word Notation and the Alphabetic Notation.

Nowhere among the other ancient nations of the world do we find such a consistent scheme of numeration as among the Hindus, which naturally reflected itself in the later place-value system. The early Hindus counted regularly in the ten-scale as so many units, tens, hundreds, and so on in successive powers of ten, unlike the Greeks, the Arabs, the Chinese, and the Japanese who introduced the thousand in the middle of their scheme of

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* To perceive how baseless this theory is, we have only to note, that out of ten symbols in the modern notation, only four (*i.e.*, 40%) have some fanciful resemblance to the corresponding Greek alphabetic numerals and three can, with a good deal of strain, be made to resemble the Greek numerals while the rest are admittedly importations from a non-Greek source.

numeration which was really a step away from the decimal scheme. While the English eleven and twelve are out of harmony with the later teens, the Sanskrit numeration has एकादश, द्वादश, etc. (one and ten, two and ten and so on). This early Sanskrit numeration in which large numbers had to be expressed in a periphrastic way such as अष्टोत्तरशत (eight above hundred), later took a more convenient form, whereby merely the numbers of the units, tens, hundreds, etc. occurring in a number were mentioned in regular order in the increasing scale of powers of ten, the names of the powers being omitted. Thus five, seven and two meant five units, seven tens and two hundreds. This scheme naturally necessitated the explicit mention of the absence of a particular power of ten in any number and the word शून्य came to be introduced to denote such gaps. To adapt this numeration to the verses in which, generally, the early Hindu scientific works were written, a kind of vocabulary was devised, which is well described by Brahmagupta thus :—

"If you want to write one, express it by everything which is unique as the earth, the moon; two by everything which is double as for example black and white; three by everything which is three-fold, the nought by heaven, the twelve by the names of the Sun."*

Mr. G. R. Kaye rejects Alberuni's statement that Brahmagupta invented this notation known as the word-numeral notation (भूतसङ्ख्या objects denoting numbers) and assumes, without any proper authority that it was probably introduced into India from the East. In this connection, it will only be proper to inquire whether in the East there has been any such extensive use of this notation as is found abundantly in the Indian astronomical and mathematical works beginning from about the middle of the sixth century A.D.

The earliest epigraphical instance of the usage of this notation in India proper dates 867 (गिरिरसवसु) Saka samvat, but in Cambodia Sanskrit inscriptions are found belonging to about 600 A.D. The period of invention of this system is uncertain and the earliest trace, as noted by Weber, seems to be in the *Srouta Sutra* of Katyayana or Latyayana. Numerous examples occur also in Pingala's manual of metrics. Varahamihira of the sixth century A D. uses this notation in *Brihat-Samhita* (*J. R. A. S.*, Vol. I, N. S., p. 407). Aryabhata might have known it and probably had tried to improve on it in

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* In this statement of Brahmagupta, we find a remarkable anticipation of the line of ideas which led to the modern definition of number (serving for finite collections) given in Bertrand Russell's *Introduction to Mathematical Philosophy* (Chapter I, pp, 18, 19).

'We may now go on to define numbers in general as any one of the bundles into which similarity collects classes...................... In other words, a number (in general) is any collection which is the number of one of its members; or more simply still : a number is anything which is the number of some class.'

his alphabetic notation, just as the later Aryabhata, who certainly knew this word-numeral notation, thought of substituting in its place his scheme of कटपयादि notation which is a complex of the alphabetic and the decimal notation and combines the advantages of both.

Dr. Bühler thinks that the Dwandwa compounds containing words with numeral significance presuppose the existence of the decimal notation, especially when these compounds had to be dissolved by 'and'. But I should think that the word numeration suggested the place-value scheme and the decimal notation, when the words had to be translated into symbols. Such symbols were supplied by the non-positional Brahmi notation, which was current side by side with the positional numeration. Thus it must have flashed to some genius (whose name may remain unknown for all time), that the positional numeration and the non-positional symbolic notation could be welded together into the simple and beautiful scheme of the decimal notation. I am disposed to believe that the positional numeration served in India the same purpose as the abacus in Rome, China and Japan to suggest the place-value principle and the zero. In fact, the positional numeration when translated into writing, naturally leads to a form of abacus and there are evidences of which we shall speak at some length in the next chapter, of the existence of such a form of abacus in popular use in India.

Before proceeding to discuss the decimal notation in India, we shall take up an interim short-lived development of a kind of ingenious alphabetic notation * due to Aryabhata. Dr. Fleet seems to think that the suggestion for this notation might have come from the Greek alphabetic notation, while Mr. G. R. Kaye calls it a crude adaptation of the Greek plan. But we believe that Aryabhata must have got his inspiration from the greatest grammarian of the world, Panini, who was the first Indian, probably, to conceive of denoting numbers by the letters of the alphabet in their order (*vide* † Goldstucker's 'Panini', p. 44). Aryabhata's notation illustrates one method of adapting the decimal numeration to symbolism. The positional principle was there, but utilizing the position itself for indicating value was not yet thought of and hence a temporary arrangement was devised to indicate the positional value by vowels, the consonants denoting the numerals proper,

e.g., ङि शि बु ण्ऌ ख्यृ = 1582237500.

The object of this system was conciseness which was certainly achieved and its formulæ are far more compact than in any other system of notation.

* For a detailed explanation of Aryabhata's scheme, *vide J. R. A. S.*, 1911, pp. 109-126.

† Goldstucker's reference to Patanjali and Katyayana about Panini's using letters in his Adhikara rules for the notation of numeral values, is rather dubious and the present writer is unable to locate the actual reference in Patanjali's *Mahabhashya*. *Cf. The Palæography of India*, by G. H. Ojha, p. 124.

According to Dr. Fleet, this system implies the use of a board ruled and lettered in some such manner as in the figure below, but otherwise left blank for resolving the details of any particular statement :—

ऌ		ॠ or ऋ		उ or ऊ		इ or ई		अ or आ		
							5			ङि
						7				शि
				2	3					बु
1	5									ण्ऌ
		8	2							ख्षृ
1	5	8	2	2	3	7	5	0	0	ङि शि बु ण्ऌ ख्षृ

The question remains open, however, whether the ancient Hindus disposed of the blank spaces either by dots or by leaving them blank or otherwise.

Since this notation was too learned and difficult for the average man, it was soon forgotten and even Lalla, Aryabhata's earliest disciple, abandoned it in favour of the more popular numerical words which could more easily be remembered and fit in with metrical euphony. But it must be remembered that Aryabhata's alphabetic notation marks an important stage in the development and is a necessary precursor of the Indian decimal notation, in that it suggested a method of using the same symbol, say, क, with such variations as कि कु, etc. to denote a multiple of a power of hundred. What remained yet to be done was to drop even the vowels and make the position itself indicate what power of ten is intended. This would require setting apart a consonant for zero also. But it probably took many long centuries to recognize that the zero was also a numeral on a par with the other numerals and that a separate symbol was necessary to denote it. It was only in the eleventh century, after the decimal notation with its place-value and zero had become definitely established that the alphabetic notation was thought of once again and re-adapted to the new notation. In this connection it is worthy of remark that the alphabetic notation in India was felt more or less as a necessity owing to the exigencies of metrical composition and therefore there is a greater likelihood of its being indigenous to India than a casual loan from Greece or elsewhere.

(*To be continued.*)

ECONOMIC CONDITIONS OF THE THEVARAM PERIOD.

By K. R. Subramanian, Esq., M.A.

In this paper are given a few interesting facts concerning the rivers and towns in Tamilakam of about the seventh century A.D. They have been culled from the Saiva psalms of Sambandhar and his elder contemporary Appar. They reveal an advanced system of irrigation and exchange of commodities for the age, which must have had its beginnings far earlier.

The Kavery delta has always been the "abode of Lakshmi" in the words of Sekkilar.[1] Karikala who has been rightly assigned to the first century of the Christian era, is said to have been the author of the irrigation system. He is praised as having built up embankments for a hundred miles for the Kavery from its mouth upwards. Before his time, the whole of the present Tanjore District must have been annually flooded for it to get the name of Punal Nadu. Earlier kings must have also bridled the wild flow of the river the lower valley of which must have been full of swamps and wilds[2] in the dim past. The Chola Nadu is the creation of the Kavery and its prosperity has always depended on it. By the time of Karikala the country in and round Puhar must have become less subject to periodic floods and been reclaimed, for the growth of a big and flourishing city would have been otherwise impossible. So the Coleroon (Tamil: Kollidam = கொள் + இடம்) must have branched off before the time of the great king and carried away much of the surplus water. In fact, the island of Srirangam (= island) is older than the epic of the anklet. Karikala did permanent work to check the caprice of the Kavery and direct it into useful channels. Due to his embankment, the Kavery must have breached again widely somewhere about the present grand anicut where the Coleroon runs on a lower level. To prevent the large wastage of water which naturally flowed down from the Kavery into the Coleroon, and serve as a safety valve in times of floods, Karikala must have raised the anicut at the eastern end of the island. Whether the present serpentine anicut is as old as Karikala may well be doubted. But the Vennar is probably more than 1800 years old. Karikala is said to have won a victory at Vennil[3] evidently named after the river. At any rate, it is certain that the river was older than the Thevaram

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1. *Periya*, Vol. I, page 72.

2. See the names of some of the villages near the mouth of the Kavery to-day, like Thalaichengadu, Pallavanam, Chayavanam, Swetavanam, and Perumpallam.

3. Dr. S. K. Iyengar: *Ancient India*.

which has not a few hymns on Tiruvaiyaru (=5 rivers). The Panchanada (=Punjab) or five rivers about the place are the Kavery, the Coleroon, the Kodamurutti, the Vennar and the Vettar. There is no reason to doubt the cause for the place being so named and the legend about the five rivers that they do not refer to the ordinary rivers is no sufficient explanation.

The Coleroon, sometimes called the Kottaru (probably because it had a fort at its mouth), finds mention in the hymns of Sambandhar and Appar. Sambandhar speaks of the Kottaru near his birth-place Shiyali, and as far as my knowledge goes, there is only one river worth the description in his hymns on Sirapuram[1] and Kochaivayam[2] and that is the Coleroon. The Uppanaru[3] mentioned in his very first hymn ill-deserves the praise. Appar mentions the Coleroon in Vijayamangai.[4]

There is clear evidence about the ancientness of the branch Arisil.[5] If we dot the various places[6] mentioned on the bank of the river, namely Pamburam, Penuperundurai, Puthur, Ambarmaghalam, Thilathappathi, etc., we can get an idea of its course. The evidence about the Kodamurutti is not so clear. The river mentioned by the boy saint near Kollambuthur[7] must be the one under consideration. Besides, the river Kaduvai[8] mentioned in two hymns and running by Kodavasal is a branch of the Kodamurutti.

Sambandhar's references to the Kavery[9] as old Kavery[10] have been mistaken as references to the Palankavery which is a branch at present of the Kavery with its source a little above Mayavaram. So the references to the old Kavery in his hymns on Nagesvaram and Kumbakonam which are far above Mayavaram merely indicate the ancientness of the river. The hymn on Vilanagar[11] refers appropriately to the Kavery and the Palankavery, the latter disappearing into the fields somewhere about this sacred place. It is quite likely that before the age of Sambandha, the Kavery changed into its present course. At any rate, there is no confusion as to their separate existence in that age. Speculation has been made if the ancient port of Puhar stood on the southern bank of the Kavery as Ptolemy of

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1. *Thevaram Tirumurai*, II, Page 129, திருசிரபுரம்—சேருஞ்சந்தணுமகிலோடு வந்திழி செழும் புனற் கோட்டாறு வாருந்தண் புனல் சூழ் சிரபுரம்.

2. *Thev.* III, 113. திருகொச்சைவயம்—நிரந்துமாவயல் புதுகு நீடு கோட்டாறு சூழ்.

3. *Thev.* I, 1. பிரமபுரம்.

4. *Thev.* V, 122.

5. One of the Sangam poets was called Arisil-Kilar.

6. *Thev.* I, 53 ; II, 131, 150 ; VI, 121.

7. *Thev.* III, 8.

8. *Thev.* II, 28 ; V, 111, கடுவாய்க்கரை புத்தூர். It is a branch of the Solachudamani which branches from the Kodamurutti.

9. *Thev.* I, 176. ஐயாறு, II, 112. முல்லைவாயில்.

10. *Thev.* I, 138. சிவபுரம் ; II, 151. நாகேச்வரம் ; III, 74. குடமுக்கு.

11. *Thev.* II, 99.

the second century A.D. makes us understand.[1] Tamil writers locate the city on the north bank where the present hamlet of Kaveripatnam stands. Tradition and other evidences leave us in no doubt as to the site of ancient Puhar. It extended as far as Tiruvenkadu about three miles from the present hamlet of Kaveripatnam which contains the Surya and Chandra tirthas of Silappadhikaram. Perunthottam (=big garden) near Tiruvenkadu must have been an interesting suburb of the ancient city. To the south the city extended, according to tradition, upto Tirukkadaiyur about four miles from the present village of Puhar. If the latter tradition is correct, the Kavery must have cut the city into two parts. It is also likely that at one time the Kavery flowed to the north of the present hamlet and *via* Tiruvenkadu, for there is a natural tendency for its waters to rush down towards Tiruvenkadu at Marithukkatti (=prevented and dammed). In the age of Sambandha, neither Swetavanam nor Bilvavanam (கடையூர்) is associated with Puhar. Only Pallavanam and Chayavanam are sung as parts of wealthy Pattinam.[2]

The Manni[3] is another of the Chola rivers which find mention in this literature. It is called old Manni[4] in a hymn of Sundara. On its south bank was Āppādi on which Appar has sung a hymn. The Bhavani,[5] one of the tributaries of the Kavery, finds mention in the hymn on Tirunana by Sambandha.

The other rivers and streams that are found in Thevaram are, in order, the Ponmukari,[6] the Palar,[7] the Niva,[8] the Kamba,[9] the Pennai,[10] the Gadilam,[11] the Pampa,[12] the Manimuthanadhi[13] and the Vaigai.[14] All these have been useful in varying degrees for irrigation, a few of them filling up tanks in flood season and the rest directly irrigating the fields through channels. Some of these rivers seem to have been used for the purpose of floating down timber and also for bringing vegetables and other things.[15]

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1. *Indian Antiquary*, Vol. XIII.

2. *Thev.* III, 139; I, 82 and II, 49 சாய்க்காடு. Now there are two stones with Yantras on them at the present border of Kaveripatnam, *i.e.*, near Chayavanam and they are locally called boundary stones till which Sampapathi has her sway. See my article on Puhar and its worthies in the *Maharaja's College Magazine*, April 1924.

3. *Thev.* IV, 60.

4. *Thev.* VII, 28.

5. *Thev.* II, 91.

6. *Thev.* III, 46. காளத்தி.

7. *Thev.* I, 71. மாற்பேறு.

8. *Thev.* II, 114. நெல்வாயிலாத்துறை.

9. *Thev.* II, 16. ஏகம்பம்.

10. *Thev.* II, 61. ஆமாத்தூர், 127. கோவலூர்.

11. *Thev.* III, 98. மாணிகுழி.

12. *Thev.* II, 61. ஆமாத்தூர்.

13. *Thev.* I, 16. முதுகுன்றம்.

14. *Thev.* I, 81. பூவணம்.

15. *Thev.* III, 116. வடகுரங்காடுதுறை. I think the description to that effect is not merely formal or conventional. The rivers might have been used for conveying goods from place to place. கறியுமாமிளகொடுகதலியின் பலங்களுங்கலந்துந்தி................

APPENDIX.

(1). < < V V V / < < V V V / < < V V V / < < = 89.

(2). ꟅΥϬΡ = 1 + 80 + 100 ; ΠΙ = 8 + 10.

(3). LX = 50 + 10. (4). HΔ = 100 + 10.

(5). ω = 10 + 1. (6). = 100 + 80 + 9. (7). 733 = 10 + 20 + 20.

(8). 2ω = 2 × 10. (9). λ1 = 100 × 1. (10). < < Y < = 10 × 10 × 1000.

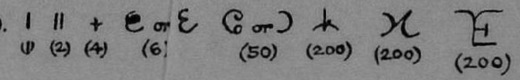
(11). Γᴴ = 5 × 100. (12). = 1000 × 10. (13). = (100 + 5 × 10) × 1000.

(14). VV<V> VV = 2 × 10 × 100 + 80 + 2. (15). ψNΔ = 700 + 50 + 4.

(16). = 300 + 50 + 4. (17). α,ηφϙβ = 18592.

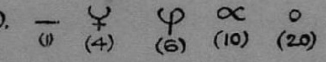
(18). = 99617. (19). X = 4. (20). 7 = 10. (21). 3 = 20.

(22). λ1 = 100. (23). XX = 8. (24).



(1) (2) (4) (6) (50) (200) (200) (200)

(25).

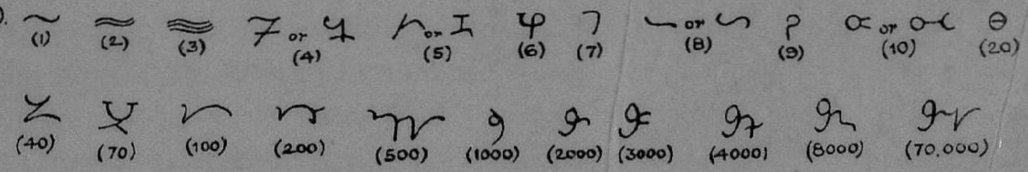


(1) (4) (6) (10) (20)

(26). (7) (9)

(27). φ = 80. (28). = 100, T = 1000. (29). = 60,000; = 1700.

(30).

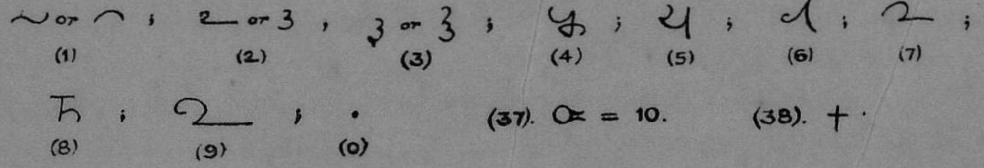


(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (20) (40) (70) (100) (200) (500) (1000) (2000) (3000) (4000) (8000) (70,000)

(31). (F), C, S ; Z, Ꙁ ; (B), H, η ; θ, σ, . — (6) (7) (8) (9)

(32). Δ. (33). (34). (35).

(36).



(1) (2) (3) (4) (5) (6) (7) (8) (9) (0)

(37). ∝ = 10. (38). + .

(39) ↑ (40). ΡΟϑ = 100 + 60 + 9. (41). = 303.

A network of roads covered the land. Trunk roads between capitals are as old as the Sangam age. There is now a trunk road along the bank of the Kavery which seems to have been very ancient. If we dot on a map the shrines on the Kavery banks visited by the two saints, we are forced to believe in the ancientness of the above trunk road. Sekkilar credits the Chola king, probably his contemporary and master, with the laying out of roads.[1]

Pages may be filled with quotations[2] from the songs picturing the green and smiling fields and the cool and dense topes of the Tamil Nadu. It has been well called the abode of Lakshmi. Similar beautiful descriptions occur in South Indian Inscriptions of the Pallava period.[3] This poetic image should not blind us to the fact that there were famines even in those days on account of failure of rain or due to floods. The stories of Sambandha, Pugalthunai, Kotpuli and Kalikkaman contain accounts of severe famines. The first story gives the information that the pious men dispensed and induced charity to relieve the famine-stricken. The same story contains the hint that gold coins were in use in the days of the saint.[4]

The difference between a village and a town (=Nagara) was generally that the latter had a temple of high reputation. Attached to it were the priests versed in the Agamas, Brahmins learned in the Vedas, musicians, and others. The aggregation of a large population due to the shrine or due to the protection afforded by the fort or temple walls gave an industrial bias to town life. If the towns were the residences of kings or chiefs, or, if they were on the coast, they had additional importance. Many of these towns seem to have been walled for safety. In some places we are left to conjecture whether the saints' reference to walls is to the town walls or the temple walls.

Long before the age of Sambandha, there were many Nesandars (=weavers) and Amarneethis (=traders). The cloths, spices and pearls of Tamilakam were famous even long before the Christian era. We know from Sanskrit literature, early Tamil literature and Pallava inscriptions as also from the plentiful archæological remains, that Kanchi on the Kamba was a big and splendid city. Sekkilar's description[5] of the origin, walling and the peopling of the city with Vellalas by Karikala and the existence of the King's Street and many shrines in the city[6] though it does not add to our information

1. *Periya*. I, 215.
2. *Thev.* I, 10, 85, 176 ; II, 74, 129, 141, etc.
3. *S. I. I.*, I. 33, 34 and the Velurpalaiyam plates.
4. *Thev.* I, 117. வீழிமிழலை.
5. *Periya*, I. 417.
6. In the Thevaram of the three, there are hymns for 5 different Saiva shrines.

at present, shows the truthfulness of his statements in general. It is interesting to read in a hymn of Sambandha[1] that it was walled and in another[2] hymn that it contained broad streets. It was the city of the Pallava according to a hymn of Sundara.[3]

Mahabalipur or Seven Pagodas is also well known to a student of Pallava history through various sources, not the least of which is the hymn of Tirumangai on Kadalmallai describing its trade. In the *Periya-puranam* a vivid description of the city is given which shows that it was an important place even in his time.[4] Mylapore[5] near Madras was a port of Sekkilar's time. Probably it had some trade even before as during the Portuguese days.

Tillai, one of the five important Saiva Kshetras in the south, owed its greatness mainly to its temple which was *the temple* of those days. The facts that its temple was benefited by Chengan[6] and gold-plated by the later Cholas and that Tiruvenkadu, a part of ancient Puhar, destroyed by inundation (about 200 A.D.) is called Adhi Tillai, go to prove that it was a colony of some of the ancient Andanars[7] of the Chola capital at the mouth of the Kavery.

Shiyali which has as many as twelve names in Thevaram and which has the largest number of hymns was a walled town with a celebrated temple often visited by kings.[8] It is a noteworthy fact that the Saiva psalter refers to the learned in the towns of Kanchi and Shiyali. Pattinathar makes a similar reference to the Patasalas and the learned men of Shiyali. It would be ununderstandable how Shiyali, removed from the coast by a distance of six miles, had overseas trade but for the fact that even to-day Tirumullaivayil is a port though small, and the Uppanaru is used by small boats to carry cargo.[9] According to a hymn of the boy saint, Shiyali was the headquarters of a line of princes evidently Chola.[10] Sanbai (Champa), one of its names, is noteworthy being a northern name and probably it was also a name for ancient Puhar whose guardian deity was Sampapathi who has even to-day an old-fashioned, brick-domed temple containing, beside her, two bhutas so terribly described to us in the epic of the anklet.

Milalai was a very big city in those days. It was the city of a Kurumbar chief, one of whose descendants probably was the Perumilalai Kurumbar of

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1. *Thev.* I, 180. ஏகம்பம்.
2. *Thev.* III, 81. கச்சிநெறிக்காரைக்காடு.
3. *Thev.* VII, 28. ஏகம்பம் மேற்றளி.
4. *Periya*, I, 401.
5. *Vayalar and Kurripputhondar Puranas.*
6. See *Kurruvan Purana.* The Chola was sometimes crowned there by the 3,000. Was *Kurruvan* of Kalandai near Kanchi the *Dharma* of Koilolugu and the Brahmapuram hymn I, 80 ?
7. Some of these ancient Brahmin sects are Saiva.
8. *Thev.* I, 1, 42, 104, 127. பிரமபுரம், குரங்கணின் முட்டம், சீகாழி, சீகாழி respectively.
9. *Thev.* I, 128 ; II, 103 ; III, 147. சீகாழி, வேணுபுரம், கழுமலம் respectively.
10. *Thev.* I, 80. பிரமபுரம்.

Sundara's age. It was the chief town of a Kurram or division. It had a big and beautiful temple said to have been visited by princes now and then.[1] Like Tillai, it contains an ancient sect of Brahmins.[2] Arur was, according to Sekkilar, a Chola capital in ancient times.[3] Probably it was a temporary capital for the later Chola kings also who must have gone about visiting such places for religious and political purposes. Appar, besides calling it a big town, speaks of it as Arur where kings worship.[4] Sundara sings of it as a walled town.[5]

The port of Karaikal, even now of some importance, figures in the story of the ancient saint Pey but nothing more is known of it. Nagai figuring in early literature as the capital of Panrinadu or Naganadu with communications with the Naga islands near India has some hymns by Sambandha.[6] But only Sundara[7] mentions its commercial importance. Kazhippalai[8] near Vedaranyam was a port of some importance in the seventh century.

Madura also has a large number of hymns in Thevaram. Its importance has been described in Tamil as well as Sanskrit literature. It was a walled city and the capital of the Pandya.[9] It has always been a wealthy city and its chief attraction has been the beautiful shrine once called Manikkovil. Some of the early literary associations with Madura find mention in Thevaram.[10]

Besides these towns, mention may be made of Anniyur,[11] Karuvili,[12] Kalayanallur[13] (one of the many Nallurs of the time) which contained a mantapa for discourses, a few of the many walled towns of the age.

In this sketch, Mahodai[14] or Vanji and Mathottam[15] in Ceylon, two other ports full of ships, must not be forgotten. It is too well known that Vanji finds a prominent place as a port in early Tamil literature and foreign accounts. Sundara and Sambandha have sung on Kedesvaram or Mathottam.

The above references tend to establish that (1) the present system of Kavery irrigation is pre-Sambandha, (2) there were many towns with peculiarly mediæval characteristics in the age of Sambandha, and (3) many of the modern small ports are very old and were fit to receive the small sailing ships of those days and thus carry on a little overseas trade and much coastal trade.

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1. *Thev.* I, 27.
2. The விழிஞ Brahmins or Mukkanis (Mukkantis ?) having top-knots like the 3000 and Soliga Brahmins.
3. *Periya* I, 40, 435.
4. *Thev.* IV, 23 and 26.
5. *Thev.* VII, 109.
6. *Thev.* I, 107 ; II, 147.
7. *Thev.* VII, 61.
8. *Thev.* III, 55.
9. *Thev.* I, 10 ; III, 65.
10. *Thev.* VI, 106 ; VII, 126.
11. *Thev.* V, 33.
12. *Thev.* V, 120.
13. *Thev.* VII, 20 by Sundara.
14. *Thev.* VII, 7.
15. *Thev.* II, 136 ; VII, 105.

SURYAPRAGNAPTI.

By Dr. R. Shama Sastry, B.A., Ph.D., M.R.A.S.

(Continued from Vol. XVIII, No. 3.)

We have said that one paryāya for all the stars is 3660. The proof of this is as follows :—

For six stars of half area the amśas are	$67 \times 6 = 402$
For six stars of $1\frac{1}{2}$ area ,,	$6 \times 201 = 1206$
For 15 stars of one whole area ,,	$15 \times 134 = 2010$
For Abhijit ,,	42
Total of the amśas =	3660.

Thus the astronomical measure of the lunar seasons has been dealt with. But, according to popular conception, the measure of a lunar season is quite different. According to it, two lunar months make one lunar season.

The lunar year $= 354 \frac{12}{62}$ days.

Hence one season $= 354 \frac{12}{62} \div 6 = 59 \frac{2}{62}$ days.

Now a Karma month is of 30 days. Hence in one Karma season of two Karma months there are 60 days. Hence compared with this it is usual with the people to consider the lunar season to be short of 1 day. Hence compared with one Karmasamvatsara, the lunar year is nearly 6 days less. These six days are called Avama days.

There is nothing in the time itself to distinguish it as consisting of Avama or Atirātra days. These distinctions are all due to our conception of various forms of months. This is what ancient teachers have taught us of Avamarātras :—

The Karmamāsa is = 30 days.

The lunar month is $= 29 \frac{32}{62}$ days.

The difference between these two is $30 - 29 \frac{32}{62} = \frac{30}{62}$.

This is the fraction which makes Avamarātras. Hence if $\frac{30}{62}$ parts of a day is the difference between one Karmamāsa of 30 days and lunar māsa of $29 \frac{32}{62}$, the difference due to one day is $\frac{1}{62}$. Hence in 62 days there will be one complete Avamarātra. On the same day (62nd day) the lunar day (tithi) will be 63rd day. Hence on the 61st day, both the 61st and the 62nd tithis will expire. Hence 62nd tithi is, according to popular parlance, as an omitted tithi.

Now, the rainy season consists of 4 months. Hence in this season the 1st Avamarātra will occur in the 3rd parva from Śrāvaṇa and the 2nd Avama

in the 7th parva. Then in the cold season of 4 months, the third Avama will occur on the 11th parva from the first parva of the cycle or in the 3rd parva in the season itself will occur and the 4th in the 15th or 7th parva. Then in the summer season the 5th Avama will happen on the 19th parva and the 6th Avama on the 31st parva. This is according to ancient teaching. But really the 1st Avama will happen on the 4th parva.

Now, regarding the question which tithi will be completed on the 1st Avama day and on what parva, the following ancient verse supplies the formula :—

The formula is of two kinds: one for odd number of tithis; and another for even number of tithis.

(i) In the case of odd number, add one to it, and double the sum. The product shows the number of the parvas.

(ii) In the case of even number, add one to it and double the sum. Again add 31 to the product. The sum is the number of parvas.

Now let the question be as follows :—

In what parva or paksha will the pratipath day be Avama and close with the second tithi ?

Now the tithi being one, we take 1; and add 1 to it; $1 + 1 = 2$. Doubling this we have 4.

Hence we may say that in the 4th parva or paksha, the pratipath will be Avama and close with the second tithi on the same day.

The reason for this is as follows :—

Now 4 parvas $\times$ 15 tithis $=$ 60 tithis.

Add to it the Pratipath and the second, the two tithis falling on the same day. The sum is 62. This gives no remainder when divided by 62. Hence the 1st Avama day will be the Pratipath.

Or let the question be regarding the second Avama day on the second day closing with the third on the same day.

Here we take 2, the number that is asked.

Adding one to it and doubling it we have $1 + 2 = 3$; $3 \times 2 = 6$. Add 31 to this. Hence $6 + 31 = 37$.

That is, in the 37th parva or paksha the second lunar day will be the second Avama day and close with the third day on the same day.

Here also 37 $\times$ 15 tithis $=$ 555 tithis.

The second is lost and the third also closed with the second day. Hence adding 3 to it, we have 558 tithis. This divided by 62 leaves no remainder.

Likewise in the case of other tithis, as follows :—

The	3rd Avama	with	4th tithi	will happen in	8th parva.
The	4th	,,	5th	,,	41st ,,
The	5th	,,	6th	,,	12th ,,

The 6th Avama with	7th tithi	will happen in	45th parva.	
The 7th	,,	8th	,,	16th ,,
The 8th	,,	9th	,,	49th ,,
The 9th	,,	10th	,,	20th ,,
The 10th	,,	11th	,,	53rd ,,
The 11th	,,	12th	,,	24th ,,
The 12th	,,	13th	,,	57th ,,
The 13th	,,	14th	,,	28th ,,
The 14th	,,	15th	,,	61st ,,
The 15th	,,	1st	,,	32nd ,,

Thus in the first half of the cycle, and likewise the same can be found out in the second half.

Now the teacher goes to explain the occurrence of the Atirātras :—

Now if we compare the solar month with the Karma month, we find the difference of a day between a solar and a Karma season ; for

One Karma month = 30 days.
,, solar ,, = $30\frac{1}{2}$,,

$\therefore$ Two Karma months = One Karma season $\}$ = 60 ,,

Two solar months = One solar season $\}$ = 61 ,,

The solar season commences with the Āshāḍha month. Hence in the 4th parva from Āshāḍha there will be one Atirātra day.

The 2nd Atirātra	will be	at the close of the	8th parva.	
The 3rd	,,	,,	,,	12th ,,
The 4th	,,	,,	,,	16th ,,
The 5th	,,	,,	,,	20th ,,
The 6th	,,	,,	,,	24th ,,

The Avamarātras are due to the lunar year, and the Atirātras are due to the solar year, both being compared with the Karma year.

Now in a cycle of 5 years there are ten Ayanas of the sun and 134 Ayanas of the moon.

The sun moves southward for 183 days
and northwards for 183 ,,

$$\text{Hence } \frac{1830 \text{ days of a cycle}}{183 \text{ of an Ayana}} = 10 \text{ Ayanas.}$$

The moon moves southward for $13\frac{44}{67}$ days
and northward for $13\frac{44}{67}$,,

$$\text{Hence } \frac{1830}{13\frac{44}{67}} = 134 \text{ Ayanas.}$$

The solar Ayana days in each year of the cycle are :—

1st	Ayana in the Śrāvaṇa month.	
2nd	,,	Māgha.
3rd	,,	Śrāvaṇa.
4th	,,	Māgha.
5th	,,	Śrāvaṇa.
6th	,,	Māgha.
7th	,,	Śrāvaṇa.
8th	,,	Māgha.
9th	,,	Śrāvaṇa.
10th	,,	Māgha.

The formula to find out the parva and the tithi of the solar Ayanas is as follows :—

Take the Ayana number in question. Deduct one from it. Then multiply the remainder by 183 and add to the product thrice the Ayana number *plus* one. Then divide the sum by 15. The quotient will be the number of parvas that have passed and the remainder the number of days in the current parva, the last of that number is the lunar day.

Now, for example, take the 1st Ayana.

$\therefore\ 1 - 1 = 0.$ Hence we take the 10th Ayana of the past cycle; *i.e.*, number 10.

Now $10 \times 183 = 1830$ ... (i)

$10 \times 3 + 1 = 31$ ... (ii)

$1830 + 31 = 1861$ ... (iii)

$\frac{1861}{15} = 124\frac{1}{15}.$

Hence we say that the 1st Ayana will occur on the pratipath day after 124 parvas of the previous cycle.

Similarly for the 2nd.

$2 - 1 = 1$

$1 \times 183 = 183$

$1 \times 3 + 1 = 4$

$183 + 4 = 187.\quad \frac{187}{15} = 12\frac{7}{15}.$

That is, the 2nd Ayana will be on the 7th day of Māgha Bahula after 12 parvas in the cycle.

Likewise the 3rd.

$3 - 1 = 2$

$2 \times 183 = 366$

$2 \times 3 + 1 = 7$

$\frac{366 + 7}{15} = \frac{373}{15} = 24\frac{13}{15}.$

That is, the 3rd Ayana will be after 24 Parvas, *i.e.*, one year; hence in the Śrāvaṇa month on the 13th day, Bahula.

Similarly in other cases also.

The tithis and the months for all the ten Ayanas are thus enumerated :—

Śrāvaṇa	Bahula	1	The five Ayanas in the Śrāvaṇa month.
,,	,,	13	
,,	Śukla	10	
,,	Bahula	7	
,,	Śukla	4	
Māgha	Bahula	7	The five in Māgha.
,,	Śukla	4	
,,	Bahula	1	
,,	,,	13	
,,	Śukla	10	

The formula for finding out the stars on these Ayana days is stated as follows :—

The constant used here is $573 + \frac{36}{62} + \frac{6}{67}$ muhūrtas.

This constant is found as follows :—

10 solar Ayanas = 67 sidereal months.

$\therefore 1 \quad = \frac{67}{10} = 6\frac{7}{10}$.

In order to reduce $\frac{7}{10}$ to muhūrtas we proceed as follows :—

$\frac{1}{10}$ of an Ayana $= 27\frac{21}{67}$ days.

$\therefore \frac{7}{10}$ ths $= \dfrac{27\frac{21}{67} \times 7}{10}$ days.

$\dfrac{1830 \times 7 \times 30}{10 \times 67} = 573\frac{39}{67} = 573$ muhūrtas, $\frac{36}{62}$ of a muhūrta and $\frac{6}{67}$ of sixty-secondth of a muhūrta.

Multiply this constant by the number of Ayanas *minus* one.

Then deduct from the product $9 + \frac{24}{62} + \frac{62}{67}$ muhūrtas for Abhijit, 30 for Śravaṇa, 30 for Dhanishṭha, 15 for Śatabhishak, 30 for Pūrvābhādra, 45 for Uttarābhādra; then 30 for Revati, 30 for Aśvini, 15 for Bharani, 30 for Krittika, 45 for Rohiṇi, 30 for Mrigaśirah, 15 for Ārdra, 45 for Punarvasu, 30 for Pushya, 15 for Āślēsha, 30 for Māgha, 30 for Pūrvaphalguni, 45 for Uttaraphalguni, 30 for Hasta, 30 for Chitra, 15 for Svāti, 45 for Viśākha, 30 for Anūrādha, 15 for Jyeshṭha, 30 for Mūla, 30 for Pūrvāshāḍha, 45 for Uttarāshāḍha, as far as possible. Then what remains is the star.

For example, let us take the first Ayana and find the star on the day.

Take 1 and deduct 1 from it. The result is 0. So take the number of the Ayanas in the previous cycle. It is 10.

Then multiply the constant $573 + \frac{36}{62} + \frac{6}{67}$ by 10.

Deducting from this 819, being the correction for stars from Abhijit to Uttarāshāḍha, *i.e.*, for one revolution.

Now 819×7 revolutions = 5733.

$5735 - 5733 = 2$.

Hence the remainder is $2 + \frac{50}{62} + \frac{60}{67}$.

Deduct from this the fraction of correction for Abhijit, multiplying it by 7 times.

Hence $2 + \frac{50}{62} + \frac{60}{67} - (\frac{24}{62} + \frac{62}{67}) \times 7 = 0$.

Hence we say that the moon completes the Uttarāshāḍha when the Ayana begins.

Similarly for other stars for other Ayanas.

Now with regard to the stars in which the sun completes the several Ayanas of a cycle:—

The sun will have traversed $19 + \frac{48}{62} + \frac{30}{67}$ muhūrtas in the Pushya where the 1st Ayana is completed.

This is worked out as follows :—

10 Ayanas are made in 5 years.

1 $\frac{5}{10}$ „ $= \frac{1}{2}$ a year.

(i) Now 6 stars from Śatabhishak onwards are of $\frac{1}{2}$ area.

$\therefore$ each being $33\frac{1}{2}$ sixty-seventh parts, $33\frac{1}{2} \times 6 = 201$ sixty-sevenths.

(ii) 6 stars from Uttarābhādra onwards are of $1\frac{1}{2}$ area.

$\therefore 6 \times \frac{3}{2} \times 67 = 603$ sixty-seventh parts.

(iii) The remaining 15 stars are of one whole area.

$\therefore 67 \times 15 = 1005$ sixty-seventh parts.

(iv) For Abhijit $\frac{21}{67}$ parts.

$\therefore 201 + 603 + 1005 + \frac{21}{67} = \frac{1830}{67}$ parts.

This is equal to one whole sidereal revolution.

Half of this = 915.

Deducting from this 21 for Abhijit, we have 894 parts or Amśas.

Now $\frac{894}{67} = 13\frac{28}{67}$.

Now $\frac{28}{67}$ multiplied by 30 gives the parts in terms of muhūrtas. $\frac{28}{67} \times 30 = \frac{690}{67} = 10\frac{20}{67}$.

Again $\frac{20}{67} \times 62 = 18\frac{34}{67}$ sixty-second parts of a muhūrta.

Hence we say that when 10 muhūrtas, 18 sixty-second parts of a muhūrta and $\frac{34}{67}$ of one sixty-secondth of a muhūrta have elapsed, the 1st Ayana commences.

Now regarding the question, in which star does the moon commence the 2nd Ayana in Śravaṇa in a cycle? We proceed as follows:—

The 2nd in Śravaṇa is really the third from the 1st in the cycle. Hence we take 3 and deduct one from it; then we multiply the constant by 2, as, $(573+\frac{36}{62}+\frac{6}{67})\times 2 = 1146+\frac{72}{62}+\frac{12}{67}$.

Deduct from this as much as = one revolution.

$\therefore (1146+\frac{72}{62}+\frac{12}{67})-(819+\frac{24}{62}+\frac{66}{67}) = 327+\frac{47}{62}+\frac{13}{67}$.

Deduct from this $309+\frac{24}{62}+\frac{66}{67}$ being the correction for stars from Abhijit to Rohiṇi. Then what remains is $18+\frac{22}{62}+\frac{14}{67}$; that is, that when out of 30 muhūrta parts of muhūrta there have elapsed $18+\frac{22}{62}+\frac{14}{67}$ and $11+\frac{39}{62}+\frac{53}{67}$ muhūrta parts remain to be passed by the moon, the 2nd Ayana occurs.

Likewise in the case of the sun:—

Here the sun makes 10 Ayanas and 5 of his sidereal revolutions. Hence 2 Ayanas in one revolution. Of these the Uttarāyaṇa always occurs in the Abhijit and the Dakshināyaṇa when there remain in Pushya $19+\frac{43}{62}+\frac{33}{67}$ muhūrta parts.

Now the moon makes the 3rd Ayana in the month of Śrāvaṇa in Viśākha when in that star there still remain $13+\frac{54}{62}+\frac{40}{67}$ muhūrta parts. As in the 2nd Ayana, here also the sum is worked out as follows:—3rd in Śrāvaṇa means 5th from the beginning. Hence deducting one from it, we multiply the constant:—

$\therefore 4\times(573+\frac{36}{62}+\frac{6}{67}) = 2292+\frac{144}{62}+\frac{24}{67}$.

Deduct from this $2\times(819+\frac{24}{62}+\frac{66}{67})$ revolutions.

Then there remain $654+\frac{94}{62}+\frac{26}{67}$ muhūrta parts.

Deduct from this $549+\frac{24}{62}+\frac{66}{67}$ being the correction for stars from Abhijit to Uttaraphalguni.

Then there remains $106+\frac{7}{62}+\frac{27}{67}$.

Deduct again 75 for stars from Hasta to Svāti.

Then the remainder is $31+\frac{7}{62}+\frac{27}{67}$, *i.e.*, when so much has elapsed in Viśākha leaving still $13+\frac{54}{62}+\frac{40}{67}$ muhūrta parts the third Ayana in Śrāvaṇa commences.

Likewise, following the same method, it can be ascertained that the moon commences the 4th Ayana in Śrāvaṇa when there remain in Revati $25+\frac{32}{62}+\frac{26}{67}$ muhūrta parts.

Similarly the 5th Ayana in Śrāvaṇa commences when the moon has yet to traverse $12+\frac{47}{62}+\frac{13}{67}$ muhūrta parts in Pūrvaphalguni.

Likewise the moon will have to traverse yet $5+\frac{50}{62}+\frac{60}{67}$ in Hasta when the first Ayana (*i.e.*, Uttarāyaṇa in Māgha) in Māgha in a cycle commences.

At this time the sun will be in the Abhijit.

Proof :—

10 Ayanas occur in 5 revolutions.

1 Ayana occurs in $\frac{5}{10}$ revolutions.

$\frac{5}{10}$ revolutions $= \frac{1}{2} = \frac{1830}{2 \times 67}$ days or 915 sixty-seventh parts.

Now in the previous Ayana $\frac{23}{67}$ parts of Pushya were passed, leaving $\frac{44}{67}$ parts behind.

Deducting this from $\frac{915}{67}$ we have $\frac{915}{67} - \frac{44}{67} = \frac{871}{67} = 13$ stars, from Āślesha to Uttarāshāḍha. The next star is Abhijit where the Ayana commences with the sun.

The second Ayana in Māgha with the moon commences when in Śatabhishak there remain $2 + \frac{28}{62} + \frac{46}{67}$ muhūrta parts.

Likewise the third Ayana with the moon in Māgha commences when $19 + \frac{40}{62} + \frac{38}{67}$ muhūrta parts remain in Pushya.

The fourth when $6 + \frac{58}{62} + \frac{20}{67}$ muhūrta parts remain in Mūla.

The fifth when $18 + \frac{36}{62} + \frac{6}{67}$ remain in Kṛittika.

It must be borne in mind that the moon commences the northern or southern movements in those stars in which the sun does; the northern in Abhijit and the southern in Pushya.

Thus while the sun makes ten Ayanas in a cycle, the moon does 134.

Hence by making 134 Ayanas, the moon makes 67 revolutions (complete).

Hence in one Ayana he makes $\frac{67}{134}$ revolutions $= \frac{1}{2} = \frac{1830 \text{ days}}{2 \times 67} = \frac{915}{67}$ stars. Here when $\frac{23}{67}$ of Pushya have elapsed, the southern Ayana was made by the moon.

$\therefore$ There remained $\frac{44}{67}$ star-parts.

Deducting this from $\frac{915}{67} - \frac{44}{67}$, we have $\frac{871}{67} = 13$ stars from Āślesha to Uttarāshāḍha. Hence we conclude that he makes the Uttarāyaṇa in Abhijit.

Likewise he makes Dakshināyana in Pushya when there remain $10 + \frac{20}{67}$ muhūrta parts. This is found as follows :—

Now in 134 Ayanas there are 67 complete revolutions of the moon.

$\therefore$ 1 $\frac{67}{134} = \frac{1}{2} \times \frac{1830}{67}$ or 915 sixty-seventh parts.

Deduct from this $\frac{915}{67} - \frac{21}{67}$ for Abhijit.

There remain $\frac{894}{67}$ parts $= 13\ \frac{23}{67}$ stars.

Deducting 13 stars from Abhijit to Punarvasu we have $\frac{23}{67}$ stars $= \frac{23}{67} \times$ 30 muhūrtas $= 10 + \frac{20}{67}$ muhūrtas passed in Pushya, when the southern movement of the moon occurs.

Yogas in a Cycle.

There are ten yogas in a cycle.

(1) Vrishabhanujata
(2) Venukanujata
(3) Mancha
(4) Manchātimancha
(5) Chhatra
(6) Chhatrātichhatra
(7) Yuganaddha
(8) Ghanasammarda
(9) Prinita
(10) Mandukapluta

These yogas are said to occur when the sun, the moon, and the star in conjunction, appear to take such form as is implied by the names. Except the 6th which occurs rarely in some particular country the rest happen in all countries. The Chhatrātichhatra or umbrella-above-umbrella occurs when the moon, the Chitra star, and the sun appear one below the other in the Dakshinâyana. Divide the ecliptic circle into 4 parts by drawing vertical and horizontal diameters. Divide each of the four quadrants into 31 divisions. But in the south-eastern quadrant divide the 28th division into 20 minor divisions, leaving the 29th, 30th and 31st divisions as before. When the moon is just arriving at the 19th minor division after traversing 27 big divisions and 18 minor divisions of the 28th, the Chhatrátichhatra yoga occurs on some occasions.

The Two Halves of a Lunar Month.

One lunar month = 29 $\frac{32}{62}$ days = 885 $\frac{30}{62}$ muhūrtas. Of this the white half contains 442 $\frac{46}{62}$ muhūrtas and the dark half also 442 $\frac{46}{62}$ muhūrtas.

The moon is divided into sixteen parts. Of these 15 parts are completely covered by the dark disc of Rāhu on the 15th lunar day and on the Pratipath day one part, on the 2nd day two parts, and so on, 15 parts on the 15th day.

The number of diurnal circles of moon in a parva :—

The moon moves through 14 $\frac{16}{62}$ diurnal circles in half a lunar month or 1768 circles in 124 parvas.

The teacher goes on to speak of two moons and the day in which they move through their diurnal circles and of the distinction between sidereal and lunar months.

Velocities of Planets and Stars.

Among the four, the moon, the sun, the Grahas and the Nakshatras, the sun is quicker than the moon, the planets than the sun, and the stars than the planets. This is ascertained by considering their motions through ecliptic circles. Imagine that the circumference of the circle is divided into 1,09,800 divisions. Now we have to understand the moon's velocity per muhūrta in terms of such circle divisions before we can find the difference in the rates of velocities of the moon, the sun and the stars.

Now the moon completes 1768 half circles * in 1830 days.

$\therefore$ One circle ,, ,, $\frac{1830 \times 2}{1768}$ days.

$= \frac{3660}{1768} = 2$ days $+ 2\frac{28}{221}$ muhūrtas.

That is, the moon moves through one circle in so much time.

From this we can deduce the moon's velocity in a muhūrta.

Now one circle is divided into 1,09,800 parts.

The moon goes through 1,09,800 parts in 2 days $+ 2\frac{28}{221}$ muhūrtas.

Hence in a muhūrta $\frac{109800}{60 + 2\frac{28}{221}}$ parts.

$= \frac{109800}{13725} \times 221 = \frac{24265800}{13725} = 1768$ parts.

That is, the moon moves through 1768 parts of the circumference of a circle divided into 1,09,800 parts in one muhūrta. (i)

Now the sun moves through 1830 such parts in one muhūrta. (ii)

for he completes one circle of 1,09,800 parts in two days or 60 muhūrtas.†

Hence in one muhūrta $\frac{109800}{60} = 1830$ parts.

Now the Nakshatra velocity per muhūrta is ascertained as follows :—

Now each of the stars takes to complete 1835 half circles in 1830 days.

$\therefore$,, ,, ,, 2 ,, $\frac{1830 \times 2}{1835}$ days.

$= 1$ day $\times 29\frac{307}{367}$ muhūrtas.

Now in 59 $\frac{307}{367}$ muhūrtas 109800 parts of one circle are completed.

Hence 1 ,, , ,, $\frac{109800}{21963} \times 367$

$= \frac{40296600}{21960} = 1835$ parts. (iii)

Accordingly we say that the moon going through 1768 parts per muhūrta is slower than the sun who goes through 1830 parts per muhūrta and that the stars moving each through 1835 parts per muhūrta are quicker than the sun.

As to grahas, they are of unsettled velocities, as they are liable to retrograde movements (Vakra).

Now it is evident that the sun moves $1830 - 1768 = 62$ parts more per muhūrta than the moon ; (i)

that the stars, $1835 - 1768 = 67$ parts more per muhūrta than the moon ; (ii)

and that the stars $1835 - 1830 = 5$ parts more per muhūrta than the sun. (iii)

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* On the supposition of two moons.

† On the supposition of two suns.

The moon's diurnal circles and the sidereal month.

The moon makes in 67 sidereal months 884 circles.

Hence ,, 1 ,, $\frac{884}{67} = 13\frac{13}{67}$ circles.

Likewise the sun makes in 67 ,, 915 circles.

Hence ,, in 1 ,, $\frac{915}{67} = 13\frac{44}{67}$ circles.

Similarly the stars make in 67 ,, 1835 circles.

Hence ,, 1 ,, $27\frac{26}{67}$ half circles.

or $13\frac{46\frac{1}{2}}{67}$ whole circles.

Changing the month, and taking the lunar month,
the moon makes in 124 parvas 884 circles.

Hence ,, 2 parvas $\frac{884}{124} \times 2 = 14\frac{32}{124}$ circles.

Similarly the sun makes in 124 parvas 915 circles.

Hence ,, 2 parvas $915 \times \frac{2}{124} = 14\frac{94}{124}$.

Likewise the stars 124 ,, 1835 circles.

Hence 2 ,, $\frac{1835}{124} \times 2 = 14\frac{94}{124}$ circles.

Now taking a karma-māsa, we see that the moon makes
in 61 karma months 884 circles.

Hence 1 karma month $\frac{884}{61} = 14\frac{80}{61}$ whole circles.

or twice the number of half circles.

Likewise the sun makes in 61 karma months 915 circles.

Hence ,, 1 ,, $\frac{915}{61} = 15$ circles.

Similarly the stars make in 122 ,, 1835 circles.

Hence ,, 1 ,, $\frac{1835}{122} = 15\frac{5}{122}$.

Note :—In all these cases, it must be borne in mind that these conclusions are made on the supposition of two moons, two suns, and two stars, making each pair a complete circle a day. Hence these half numbers refer to one of these pairs, *i.e.*, half the number of circles per month.

Now taking the solar month, we see
that the moon makes in 60 solar months 884 circles.

Hence ,, 1 ,, $\frac{884}{60} = 14\frac{11}{15}$ circles.

Likewise the sun ,, 60 ,, 915 circles.

Hence ,, 1 ,, $\frac{915}{60} = 15\frac{15}{60}$ circles.

Similarly the stars make in 120 solar months 1835 circles.

Hence ,, 1 ,, $\frac{1835}{120} = 15\frac{15}{120}$ circles.

Likewise we can find out the exact number of circles which the moon makes in an intercalary month. But in doing so we cannot use the ordinary cycle of 5 years without involving ourselves in long fractions; for a Yuga consists of 57 months, 7 days 11 muhūrtas and $\frac{23}{62}$ of a muhūrta, if all the months of a Yuga are converted into intercalary months. (An intercalary year of 13 lunar

months is = 383 $\frac{44}{62}$ days. This divided by 12 gives 31 days, 29 muhūrtas and $\frac{17}{62}$ of a muhūrta, as the measure of an intercalary month. Hence in a Yuga there are 57 such intercalary months, 7 days, 11 muhūrtas, and $\frac{23}{62}$ of a muhūrta). So we use the major cycle of 780 years or 156 cycles of 5 years each. Such a cycle converted into intercalary months of the said length will be=8928 intercalary months.

Now the moon makes in 8928 inter months 137904 circles.

Hence ,, 1 ,, $\frac{137904}{8928} = 15\frac{88}{186}$ circles.

Likewise the sun makes in 8928 inter months 142740 circles.

Hence ,, 1 ,, $\frac{142740}{8928} = 15\frac{245}{248}$ circles.

Similarly the stars make in 8928 inter months 143130 circles.

Hence ,, in one ,, $\frac{143130}{8928} = 16\frac{47}{1488}$ circles.

We may also find out the number of circles which the moon, the sun and the stars make in a whole day.

Now the moon makes in 1830 days 1768 half circles.

Hence ,, 1 ,, $\frac{1768}{1830} = \frac{884}{915}$ half circles.

Likewise the sun makes in 1830 days 1830 half circles.

Hence ,, 1 ,, $\frac{1830}{1830} = 1$ half circle.

Likewise the stars make in 1830 days 1835 half circles.

Hence ,, 1 ,, $\frac{1835}{1830} = 1\frac{2}{782}$ half circle.

For one complete circle the same process may be employed.

The moon makes one complete circle in 1 $\frac{81}{442}$ days.

The sun ,, ,, 2 days.

The stars ,, ,, 1 $\frac{365}{367}$ days.

Likewise we may find out the number of circles which the moon, the sun and the stars make in a cycle.

The moon traverses in a muhūrta 1768 parts of the ecliptic circle divided into 1098 parts.

There are in a Yuga 54900 muhūrtas.

Hence in a Yuga he traverses $54900 \times 1768 = 97063200$ parts.

Hence $\frac{97063200}{109800} = 884$ circles.

Likewise the sun traverses in 2 days one circle.

Hence ,, ,, in 1830 days $\frac{1830}{2} = 915$ circles.

Similarly the stars move in one muhūrta through 1835 parts of the ecliptic circle divided into 109800 divisions.

Hence in a Yuga 1835 × 54900 = 100741500 divisions.

These divided by 109800 = 1835 half circles.

The author goes on to refer to the views of 25 astronomical schools on the disappearance of old moons and the reappearance of new moons, muhūrta after muhūrta; on the situation of the sun about 1000 yojanas above the earth, the moon 1500 yojanas above; the diametrical measure of the spheres of the sun and the moon; the number of suns, moons, their wives, their satellites the number of stars.

Then referring to eclipses of the sun and the moon, he criticizes the views of others who say that Rāhu swallows either of them in part or as a whole and that the planets tearing out Rāhu's belly, come out of it. In his own view eclipses are nothing but the covering of the sun's or the moon's disc partially or wholly by the dark vimāna or car of Rāhu. This Rāhu is called Parva Rāhu as distinguished from Nitya Rāhu who causes the phases of the moon by covering 1/16th part of the moon's disc every day upto 15/16 parts on the 15th lunar day in the dark half of the month and again disclosing those parts upto 15/16th parts on the 15th in the white half of the month.

The least interval between one solar or lunar eclipse and another is six months and the greatest is 42 months for the lunar and 48 years for the solar eclipse.

Referring to Grahas or planets, he says that they are 88 in number. Their names are :—

1. Angāraka
2. Vikalaka
3. Lohityaka
4. Saniśchara
5. Adhunika
6. Pradhunika
7. Kana
8. Kanaka
9. Kanakanka
10. Kanavitanika
11. Kanasantanaka
12. Soma
13. Sahita
14. Asvasana
15. Karyopaga
16. Karbataka
17. Ajakaraka
18. Dundubhaka
19. Sankha
20. Sankhanabha
21. Sankhavarnabha
22. Kansa
23. Kansanabha
24. Kansavarnabha
25. Nīla
26. Nīlāvabhāsa
27. Rūpi
28. Rūpyāvabhāsa
29. Bhasma
30. Bhasmarāśi

31. Tila
32. Tilapushpavarnaka
33. Daka
34. Dakavarna
35. Kaya
36. Vaudhya
37. Indrāgni
38. Dhūmaketu
39. Hari
40. Pingala
41. Budha
42. Śukra
43. Brihaspati
44. Rāhu
45. Agasti
46. Manavaka
47. Kāmasparśa
48. Dhura
49. Pramukha
50. Vikata
51. Visandhikalpa
52. Prakalpa
53. Jatala
54. Aruna
55. Agni
56. Kāla
57. Mahākāla
58. Svastika
59. Sauvastika
60. Vardhamanaka
61. Pralamba
62. Nityaloka
63. Nityodhyota
64. Svayamprabha
65. Avabhāsa
66. Śrēyaskara
67. Khemankara
68. Abankara
69. Prabhankara
70. Arajā
71. Virajā
72. Aśōka
73. Vītaśoka
74. Vivarta
75. Vivastra
76. Viśāla
77. Sāla
78. Suvrata
79. Anivritti
80. Ēkajāti
81. Dvijāt
82. Kara
83. Karika
84. Raja
85. Argala
86. Pushpa
87. Bhava
88. Kētu

STUDIES IN BIRD-MYTHS No. XXI.—ON AN ÆTIOLOGICAL MYTH ABOUT THE GOLDEN-BACKED WOODPECKER, THE INDIAN SPOTTED WOODPECKER AND OTHER SPECIES.

BY SARAT CHANDRA MITRA, ESQ., M.A., B.L.

THE Golden-Backed Woodpecker (*Brachypternus Aurantius*), which can be easily recognized by its possessing a back of old gold colour and the scarlet crest, is widely distributed throughout India though it can hardly be met with in the higher hills. The Indian Spotted Woodpecker (*Picus Macii*) is also found throughout Northern India, though they are specimens in the Lucknow Provincial Museum, which have been obtained from Sikkim and Terai.*

This latter species also occur in the District of Rangpur, in Northern Bengal, for Mr. Vas says, "The Indian Spotted Woodpecker (*Picus Macii*) and the common green barbet are frequently seen, and the voice of the Cuckoo (*Koel*) and the Indian Mocking Bird (*Kokil*) is frequently heard in the hot weather, though the birds themselves are not often visible."†

With regard to the two aforementioned species of woodpeckers, Dr. W. T. Blanford says:—"*Brachypternus Aurantius* (The Golden-Backed Woodpecker) is found throughout India and Ceylon.

By far the commonest and most familiar of Indian woodpeckers, this is often seen about villages where there are trees, and especially in mango-groves. It is also found in thin forest, and in Sind in tamarisk-scrub and feeds much on ants; it is a bold noisy bird with a loud screaming call, often uttered on the wing."‡

The *Picus Macii* is also known as *Dendrocopus Macii* (The Fulvous-Breasted Pied Woodpecker). "This species occurs throughout Lower Bengal; it is common around Calcutta."§

The most remarkable habit possessed by the woodpecker is that of tapping the bark of trees and thereby searching for grubs which form their principal article of diet. For the purpose of exploring for insects he always pitches himself up the bark, sounding the trunk with his beak for insects as

* *Vide* the "Catalogue of the Birds in the Provincial Museum, N. W. P. and Oudh, Lucknow", on the 1st April, 1889. Printed by order of the Museum Committee, Allahabad. N. W. P. and Allahabad Government Press, 1890. P. 46. (Serial No. 126.)

† *Vide* "Eastern Bengal and Assam District Gazeteers, Rangpur". By J. A. Vas, B.A., LL.B., Bar-at-Law, I.C.S., Allahabad. Printed at the Pioneer Press, 1911. Page 14.

‡ *Vide*, *The Fauna of India Series*—Birds, Vol. III, pages 58—60.

§ *Ibid.*, pages 39—40.

he goes. The guiding principle of his life is ever "*excelsior*", for he always goes upwards along the trunk though he can sometimes slip backwards or laterally round the trunk of the tree if he feels inclined to do so.

The question now arises: Why does the woodpecker tap the bark of the tree with his beak? This question has been answered by Prof. Low, who says, "*The woodpecker is quite as keen in detecting by sound the presence of insects beneath the bark of a tree*, and the spotted fly-catcher is aided in his pursuit of flying insects by the sounds they emit while on the wing."*

Two other most noteworthy peculiarities in the anatomy of this feathered carpenter is its "stiff wiry tail, which he never cocks up. It serves as an excellent support to him as he clings vertically to the bark of the tree trunk." The second noteworthy physical characteristic is its "hard chisel-tipped beak, which contains a most curious tongue which is worm-like and armed with a many-barbed horny tip. This he can shoot out with great facility to some distance, as its base is supported by a pair of bony springs; and altogether it is an admirable instrument for exploring crevices and persuading any grub which may lie hid therein to come out to dinner." †

The next remarkable habit possessed by the woodpecker is that of uttering a ringing cackle while he wings his flight, with outstretched neck and legs tucked up onward to some tree-trunk which he intends to explore for insects. Mr. Frank Finn says that this propensity for "irresponsible and irrelevant hilarity" is a characteristic of all members of the woodpecker tribe. Hurdis, the author of *The Village Curate*, has also recorded this habit with respect to the English Green Woodpecker (*Gecinus Viridis*) as will appear from the following passage from his aforementioned poem:—"The Golden Woodpecker laughs loud at nothing."

It must be noted here that, even by the greatest stretch of imagination, the epithet "*Golden*" can hardly be applied to the Green Woodpecker of England. ‡

The woodpeckers derive their name from their habit of tapping the trunks of trees with their bills. The primitive myth-makers of Bengal, who were keen observers of Nature, noted this habit and explained the origin thereof by inventing the undermentioned myth:—

In very ancient times, there lived in a forest a very pious *sannyāsī* (or ascetic) who was a great adept in the art of playing upon the stringed instrument called the *ektārā*. When, in the evening, after finishing his daily

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* *Vide* the article entitled, "Nature's Fine Faculties. Some Unexplained Problems." Published in the *Calcutta Daily Englishman* of Monday, the 21st June 1926.

† *Vide, The Birds of Calcutta*, by Frank Finn, B.A., F.Z.S., M.B.O.V. Third Edition. Calcutta. Thacker Spink & Co. 1917. Pages 78—83.

‡ *Op. cit.*, page 78.

devotions and prayers, he would sit and play upon the *ektārā*, all the beasts and birds of the forest would flock round him to hear the music.

Right in front of this forest was a great mountain on whose other side were situated the habitations of men. During the autumn of every year, the ascetic used to pay his annual visits to the people who dwelt in those habitations, and, towards the close of autumn, would finish his round of visits and return to his native forest and to his companions—the beasts and the birds.

One year, on the advent of the month of *Bhādra* (August—September), the ascetic, taking his *ektārā* with him, started on his annual tour in the villages which were situated on the other side of the mountain.

On the very first day of his tour, he arrived towards the close of the day at a village which he had never visited before and, coming across a cottage, entered it. He found that an old woman, who was naturally tart-tempered, was cooking therein, asked for a night's lodging in her cottage and for a meal. But, cross-tempered as she was, she point-blank refused to give him the asked-for shelter and food, saying that she had none to give him.

But, nothing daunted by her refusal, he further said: "My good old woman! If you have no food to offer to me, well and good. But I am very thirsty. Therefore, do be good enough to give me a drink of water." Thereupon, the old woman again flew into a fit of rage and refused to furnish him with the asked-for drink, saying that there was no water in her cottage to give him to drink.

Seeing the old woman's outrageous conduct, the ascetic got very angry and said: "Old woman, as you have refused to give me food and drink, though I am very hungry and thirsty, henceforth you will have to search for your food in the holes and crevices of trees and you will have to quench your thirst with the water of the rain that falls from heaven."

No sooner were these imprecatory words uttered by the *sannyāsī* (or ascetic) than the old woman was metamorphosed into a long-billed woodpecker which flew into and sat upon a *bael*-tree (*Ægle marmelos*) which grew by the side of her cottage, and tapped the trunk thereof with her beak. Up to the present day, this bird cannot quench her thirst by drinking the water of tanks and ponds, but has to slake it by opening her beak wide and catching whatever quantity of rain-water would fall thereinto.*

On analyzing the preceding ætiological myth, we find that the main incidents thereof may be stated as follows :—

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* For a fuller version of this ætiological myth see the article entitled, "*Kāth Thokrār Janmakathā*" (or "The Birth-Story of the Woodpecker") at pages 448—451 of the Bengali monthly magazine *Mouchāk* (published from No. 90-2, Harrison Road, Calcutta) for Fālguna 1332, B.S. (February—March 1926 A.D.)

(1) A hungry and thirsty ascetic asks for food and a drink of water from an old cottage-woman.

(2) The old woman truculently refuses to give him the same.

(3) On this, the angry ascetic pronounces a curse upon her, saying that she will have thenceforth to search for her food in the holes and crevices of the trunks of trees and to quench her thirst by opening her beak wide and catching the rain-water therein.

(4) As soon as this curse is pronounced, she is metamorphosed into a woodpecker which possesses the habit of tapping the trunks of trees with her beak.

The principal *motif* of the myth is that the old woman committed a heinous sin by not furnishing the hungry and thirsty guest with food and water and that she was, therefore, rightly punished by being transformed into a woodpecker.

The question, therefore, arises: Is there any other ætiological myth, in Indian folklore, analogous to the preceding one?

We must answer this question in the affirmative and state that there is current, in Eastern Bengal, an ætiological myth which shows how an undutiful son, who neglected to supply his dying mother with a drink of water, was, for this dereliction of duty, metamorphosed into a skylark. * Furthermore, there is current, in Southern India, an ætiological myth which sets forth how a cowherd refused to supply the sacred cow with a drink of water when she was thirsty and that, for this inhuman act, the God Vishnu punished him, for evermore, by metamorphosing him into a hornbill and provided his bird-shape with a huge bill which would enable it to quench its thirst only by turning its head upwards whenever it would rain.†

The same method of punishing a bird by condemning it to quench its thirst by drinking rain-water only, was also meted out to the woodpecker in a bird-myth which is current in France. It is stated therein that, at the time of the creation of the world, the task of excavating the seas, lakes and rivers, was assigned to the birds. But the woodpecker alone refused to join in this work. For its indolence and disobedience, it was condemned to dig, for ever, the wood of trees with its bill. A further punishment was also meted out to it by condemning it to the effect that it would be able to quench its thirst only by drinking of the water of heaven. It is, moreover, believed that for this reason only, the woodpecker's head is so frequently turned upwards.‡

* *Vide* my article entitled, "*Studies in Bird-Myths* No. III.—*On two Ætiological Myths about the Skylark*, in *The Quarterly Journal of the Mythic Society* (Bangalore), Vol. XIV, pages 106-110.

† *Vide* the article on *Bird-Mythology* in the *Calcutta Review*, No. CCXXV (for July 1901), pages 72-73.

‡ *Op. cit.*, pages 72-73.

STUDIES IN PLANT-MYTHS No. I.—ON AN ÆTIOLOGICAL MYTH ABOUT THE NIGHT-FLOWERING JESSAMINE.

By Sarat Chandra Mitra, Esq., M.A., B.L.

The Night-Flowering Jessamine (*Nyctanthes Arbor-tristis*) is a small tree which is grown in many parts of India for the sake of its beautiful flowers which are offered to the gods and from which a perfume is made. It is, however, valued for the yellow tubes of the corollas of its flowers which yield a beautiful orange-coloured dye. It is known in Sanskrit as *Sephālikā*, in Bengali as *Siuli* and in Hindustani as *Harsinghar*.

The old Dutch traveller, J. H. Linschoten who travelled in Portuguese India more than three hundred years ago, has published in his *Travels* the following pathetic myth accounting for the origin of this tree which he calls "The sad tree:"—This tree is called '*sad*' because it only flowers at night throughout the year (?), and may be reckoned among the marvels of (Indian) vegetation. Even at sunset no flowers appear, but, soon after the expiration of half an hour, it is conspicuous for the beauty of its numerous blossoms which fill the nostrils with their sweet odour. With the rising sun these flowers fall off and the ground is quickly covered with them, as it were in grief at the demise of the tree, the latter reviving again in the evening, proceeds to flower and lose its flowers, alternately by night and day * * * * In the Malay language it is called "Suigacy", and by the inhabitants of the Deccan "Parisatico" or "Pul". They explain the origin of the name by the following Indian legend:—*There was a certain nobleman named Parisatico, whose exceedingly beautiful daughter was wooed by the sun; and when dazzled by his charm, she surrendered to the importunity of such a glorious lover, she was basely deserted by him for another damsel with whom he had become enamoured. Hence the grief of the deserted, who in a fit of sad despair put an end to her own life. The corpse was placed on a funeral pile and consumed by the flames, and they positively assert that this tree sprang from the ashes of this deserted beauty and in token of her grief and indignation it shed its flowers with the rising sun and loses its petals, preferring to exhibit its ceaseless woe during the gloomy hours of the night*".*

The incident of the Night-Flowering Jessamine springing from the ashes of the deserted princess bears a striking resemblance to the well-known Indian legend which accounts for the origin of the Tulsī or the sacred Basil

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* *Vide* the *Indian Gardening* of the 30th November 1899, p. 216.

(*Ocymum sanctum*) from the ashes of Brindā who immolated herself on a funeral pyre with the corpse of her deceased husband Jalandhar, king of the Asuras.

The root-idea lying at the basis of these two ætiological myths is the savage belief that souls of dead men and, for the matter of that, the different parts of the bodies of dead persons may grow up into trees or blossom forth as flowers. This conception is common in folk-lore and in poetry. Based on this belief is the pretty poetical concept of flowers springing up from the graves or ashes of buried lovers, of which an instance occurs in the ballad of "Fair Margaret and Sweet William".

In the story of Tristram and Ysoude, an eglantine springs up from the grave of Tristram and winds its arms about the image of the Ysoude. The great bard of Avon has immortalized this concept in the words of Lærtes over Ophelia :—

"Lay her i' the earth,
And from her fair and unpolluted flesh
May violets spring."

and Tennyson says :—

"And from his ashes may be made
The violet of his native land."

The incident of the sun-god's wooing the daughter of king Parisatico and of his subsequently deserting her basely bears a striking similarity to the incident of the sun-god's marrying a human girl named Gaurī, which is described in some folk-songs* still chanted in the district of Barisal in Eastern Bengal.

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* *Vide* my article entitled, "On the Cult of the Sun-God in Mediæval Eastern Bengal" published in the *Journal of the Department of Letters*, Vol. XV, pp. 149 to 200.

KANNADA PASSAGES IN THE OXYRHYNCUS PAPYRI No. 413.*

By S. Srikantaiya, Esq., B.A., B.L., M.R.A.S.

In the Archæological Report for 1926, Dr. R. Shama Sastri, Director of Archæological Researches in Mysore, gives a prominent place to a consideration of the identification of certain passages in an unknown language occurring in a Greek farce of the second century A.D.

As a result of the excavations carried out in Lower Egypt at the instance of the Biblical Archæological Association, at Oxyrhynchus a large find of Papyri was made in 1897. Texts and translations were then completed and the Oxyrhyncus Papyri No. III was published by Messrs. B. Grenfell and A. S. Hunt in June 1903 under the auspices of the Egyptian Exploration Fund. Among the new classical fragments in that volume, No. 413 is a Greek play or farce, based upon the story of a Greek girl carried off to the coast of a country bordering on the Indian Ocean and rescued by her brother, with some passages in an unknown language. In the *Hermes* (Berlin), Vol. XXXIX, p. 307 *ff.* and in the *J.R.A.S.* for 1904, Dr. E. Hultzsch sought to identify a few of the passages with words in the Kannada language. Mr. B. L. Rice, in the Mysore Archæological Report for 1904, considered this identification interesting and significant. According to him, in the Papyrus, "occur what are meant to be some Indian words, and these, it has been conjectured, are no other than Kannada, the prevalence of which in parts of the west coast renders the supposition not improbable. Of the two or three short sentences used, a Greek translation is given of a portion, and they are thus known to refer to a drinking scene...... Dr. Hultzsch......with some modifications of the originals produces (Kannada) sentences......The subject is certainly of interest, and connects the language of Mysore with early classical antiquities in an unexpected manner." Mon. S. Levi refers to the fragment of a Greek farce, played in Egypt, which has its scene laid in India, and has for its topic the adventures of a young Greek, Charition, who finds herself in the power of an Indian king, and observes that by its importance for the history of the Indian theatre, the fragment calls for special study.[1] According to Dr. G. A. Grierson, the oldest specimen of Kanarese is, according to Dr. Hultzsch, contained in a Greek play preserved in a papyrus of the second century A.D.[2] Rao Bahadur R. A. Narasimhachar, in the *Lives of Kannada Poets*, first

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* A paper read before the Mythic Society on the 28th February, 1928.

1. *Ind. Ant.*, XXXIII, p. 12.

2. *Linguistic Survey of India*, Vol. IV, p. 653.

published in 1907 and since republished, also refers to it.[3] Further on, he says in Kannada—'ಕೆಲವು ಕನ್ನಡ ಶಬ್ದಗಳು ದೊರೆಯುತ್ತವೆ,'[4] though he carefully adds a foot-note that *Dr. Hultzsch* reads a few sentences of the Greek farce as: ಬೇರೆ ಕೊಂಚ ಮಧು ಪಾತ್ರಕ್ಕೆ ಹಾಕಿ; ಪಾನಂ ಬೇರೆತ್ತಿ ಕಟ್ಟಿ ಮಧುವಂ ಬಿರಿತ್ತುವೆನ್.

Dr. Kittel died at Tubingen in 1903, apparently without the knowledge of the papyrus or without having been able to give a consideration to it. Dr. Shama Sastri has taken considerable trouble in identifying every unknown word in the Greek papyrus. It is hoped that his splendid effort will engage the attention of scholars as it deserves.

As regards the play, the authors observe: "Both sides of this remarkable papyrus are occupied with literary compositions of an unusual type. On the *recto* are three columns, of which the two latter are almost complete, of a low comedy or farce, written in a good sized semi-uncial hand, the *dramatis personæ* being carefully distinguished and stage directions added. Adhering to the right of the third column about half-way down is an uninscribed fragment of some size, showing that the work did not extend beyond half a column more at most. On the *verso* are, firstly, two columns in a much smaller and more cursive hand, preceded by a few letters of a third upon the projecting fragment already referred to, from what may best be described as a mime, which is mainly, at the best, a monologue. The second of the two complete columns is shorter than the other, and there are some six centimetres of blank space below it. Secondly, adjoining this to the right is another column of dialogue in the style of the *recto*, and with the same characters, written in a somewhat larger and more careful hand, but evidently by the same person who was responsible for the foregoing mime. This column was intended to supersede the latter portion of the first column of the *recto*......To assign both sides of the papyrus to one scribe is out of the question, but we are not inclined to think that the two documents were separated by a considerable interval of time. The hand of the *recto* we attribute with little hesitation to the Antonine period; that of the *verso* no doubt falls within the second century.[5]

In the words of the publishers of the Papyri, the scene of the play is the coast of a barbarian country bordering on the Indian Ocean, and the subject is the adventures in those remote regions of a party of Greeks, chief among whom is Charition, the heroine of the drama. Such themes are familiar from the pages of the early Greek romances, and the plot of this piece seems to have run very similar to theirs.[6] Charition had not improbably been

3. Introduction, p. 16. 4. *Ib.*, Kan. Intro, p. 7, *i.e.*. Some Kannada words occur.

5. *Oxyrhynchus Papyri*, III, p. 41.

6. *Cf.* Euripides; Helen. The real Helen takes refuge in the royal tomb of the Egyptian king wherefrom she is rescued, from falling into their hands, by Greek sailors who arrive there on their way from Troy, with her husband Menelaus.

carried off in the usual way by pirates, and had so come into the hands of the barbarians, whose Greek-speaking king is one of the characters of the play. She had apparently taken up her abode in a temple; and the present fragment describes her rescue by her brother and others who had arrived by sea, and who succeed in effecting their escape after making her captors drunk. The buffoon supplies the comic element in the farce.[7]

The entire dialogue in the play or farce has been reconstructed, with marvellous dexterity by Dr. R. Shama Sastri. According to him, the scene is Malpi, a harbour near Mangalore, into the hands of whose king Charition falls a captive. The Greek lady is said to be familiar with the language of the country to carry on a conversation with its king, who is also familiar with the Greek tongue. The buffoon is ignorant of the Indian dialect but yet some non-Greek words are assigned to him. Two more Greek characters in the play are acquainted with the unknown language.

Dr. Hultzsch who first essayed the identification of some unknown words with the Kannada language details several reasons in its support :—

A. 1. The farce is concerned with a lady's stranding on the borders of the Indian Ocean and the king of that country addresses his retinue by the words "Chiefs of the Indians".

2. The king and his retinue use their own language.

3. Twice one of the Greeks accompanying the lady gives the Greek translation of a few Indian words :—

(*a*) l. 59 – *Brathis* means 'let us draw lots for the shares', l. 64—*brathis* = *bēṛ aḍisi*.[8]

(*b*) l. 66 – The words *Kottos* and *Zopit* are rendered into 'give to drink quickly'.

Kottos = *Kuḍisu* = give to drink.

(*c*) l. 61 – means 'having poured a little wine into the cup separately' = *Beṛe koncha madhu pātrakke hāki*'.[9]

(*d*) ll. 83-4. Dr. Hultzsch agrees with Dr. Grierson's conjecture that the first word *pânoum* may be *pânam* = drink. Then, if Kannada, *pânam beṛe etti katti madhuvam ber ettuvenu, i. e.*, 'having taken up the cup separately and having covered (it), I shall take wine separately'.[10]

(*e*) l. 85, *Parak* is *Parāku, i. e.*, attention.[11]

NOTE.—Dr. Hultzsch is unable to make out the other words and sentences in the 'barbarian language', which Dr. R. Shama Sastri has now identified as Kannada.

7. *Oxy. Pap.*, p. 42.
8. *Cf.* Note 12, p. 13 of the *Mys. Arch. Rep*, 1926. Also p. 46, l. 59, *Oxy. Pap.*
9. *Cf.* Note 16, p. 14 of the *Mys. Arch. Rep.*, 1926.
10. *Cf.* Note 43, p. 15 of Do.
11. *Cf.* Note 44, p. 15 of Do. ; blessing.

B. The Indian language employed being Kannada, the site of Charition's adventures must be a port on the west coast of India between Karwar and Mangalore. Though now parts of North and South Kanara, where, besides Kannada, Konkani and Tulu are spoken, this territory was formerly ruled over by Kanarese princes.

C. The unknown author of the Greek farce may have acquired his knowledge of the Kanarese words and sentences either from a native of Kanara who resided in Egypt, or from a Greek who had learnt the vernacular during his stay in India.

D. The existence of commerce by sea between Africa and India at the time renders it possible. The *Periplus* and Ptolemy mention a large number of ports on the Indian west coast by name. After Hippalus, the south-west monsoon was availed of by the Greek mariners to go to India from Arabia or Cape Guardafui.

E. (*i*) In the list of inhabitants dating from the time of Vespasian, an Egyptian is registered as absent in India.[12]

(ii) In an (hitherto misread) inscription of the temple of Redēsīye, on the route from the port of Berenikē, on the Red Sea, to Apollinopolis Magna (now Edfu), on the Nile, Prof. Wilcken discovered the name of an Indian traveller who halted there to worship at the shrine of the Greek god Pan.[13]

F. The existence of Roman imperial coins found in several parts of South India, in Malabar, Cannanore, the Coimbatore district, on the Coromandel Coast, at Madura, etc., goes to suggest the existence of a Roman Settlement and a mint at Madura.[14]

G. Indian Astronomy was greatly influenced by the Greeks:

(i) Romaka Siddhanta gave rules for the meridian Yavanapura (of the Greeks) *i.e.*, Alexandria. The results of Greek science which were known to the author were imported from Africa by sea to the port of Broach on the Narmada river and hence up-country to Ujjain.[15]

(ii) *Gargya-Samhita* (first century B.C. Prof. Kern) mentions the Greek astronomers as well as the Greek kings of the Punjab.

(iii) A calendar fragment discovered at Milet and belonging to the second century B.C. gives several weather forecasts on the authority of the Indian Kallaneus.[16]

12. Kenyon: *Greek Papyri in the British Museum*, Vol. II, p. 48, l. 42; p. 49, l. 92, *cf.* Prof. Wilcken.

13. Dr. Hultzsch says the record belongs to the period of the Ptolemies and the name of the record may be a hellenised form of the Hindu word Subhānu. Quaere, why not bhānu?

14. A silver coin purchased by Dr. Hultzsch in the Bangalore bazaars bore on the obverse the head of Ptolemy I facing the proper left, and on the reverse an eagle, sitting on the thunderbolt and facing the proper right, with a legend in Greek round the eagle. *cf. J.R.A.S.* 1904.

15. We are also supposed to get our names of the days of the week from the Greeks.

16. Information furnished by Prof. Wilcken to Dr. Hultzsch.

(iv) Kalanos, not the Gymnosophist who accompanied Alexander and ascended the funeral pyre at Susa, turns up at the embassy to Augustus. He comes from Broach and burns himself at Athens, where a tomb is raised to him.

H. The Græco-Roman records of Indian embassies are full of similar odd and incredible statements.[17] To Augustus, "embassies of kings were frequently despatched from India, which had never before been seen with a leader of the Romans.[18]

From these, Dr. Hultzsch concludes a lively intercourse between India and Occident about the time of the birth of Christ and says there can be nothing strange in the circumstance that the author of the Oxyrhyncus farce or his informant must have been acquainted with the Kannada language.[19]

Kannada Language.

The Kannada language is now spoken in the whole of Mysore and Coorg, surrounding parts of the Madras Presidency, in the Nilgiris, in Madura by the immigrants, in parts of Central Provinces and Berar, in the southern districts of the Bombay Presidency and in the western parts of the Nizam's Dominions, by a population totalling about eleven millions. About the ninth century A.D., it was spoken from the river Kaveri to the river Godavari. The group of Dravidian languages as a whole, however, covered the entire peninsular India from the Vindhya mountains and the Narmada river in the north to Cape Comorin in the south, excluding Orissa in the east and the Gujarati and Marathi districts in the west, and also in the northern half of Ceylon. Besides, a Dravidian dialect, Brāhūi, is spoken in the far north-west in Beluchistan.[20]

Malayalam is said to be a very ancient off-shoot of Tamil. Mr. Sten Konow considers very many similarities to exist between the Etruscan and Dravidian languages.[21] Telugu which has a very rich literature, is mainly spoken on the Coromandel coast, north of Madras, and the adjacent interior right up to the centre of Hyderabad.

Whether the Dravidian civilization or the Indo-Aryan Brahmanical culture be older, the fact remains that the materials for a study of the early Dravidian institutions are scanty,[22] and it is even more so with regard to the Kannada country.

Tamil was the language of all the kingdoms in the south, in the early centuries A.D. Malayalam was not in existence. The golden age of Tamil literature may be ascribed to the first three centuries A.C.[23]

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17. *The Indian Travels of Apollonius of Tyana, etc.*, by Mr. Priaulx, London, 1873.
18. *Monumentum Ancyranum* edited by Mommsen, Chap. 31.
19. *J. R. A. S.*, 1904, pp. 399-405.
20. *Lives of Kannada Poets*, Intro., p. xi.
21. *J. R. A. S.* for 1904, p. 45.
22. *Oxford History of India*: Vincent Smith (1920), Intro. xi.
23. *Ib.*, p. 144.

The country was known as Dravida. Limyrike—Damirike—*i.e.*, Damir-Ike, referred to in the *Periplus*,[24] is, according to Bishop Caldwell, the Tamil country. At that time, beyond Barygaza (Broach), the adjacent coast extended in a straight line north to south and was called Dachina-Bades.[25]

The antiquity of the Kannada language is well known. The word 'Karnata' occurs in Varahamihira's *Brihatsamhita*, a work of the sixth century. It is also found in Somadeva's *Kathasaritsagara* due perhaps to its mention in the *Paisachi Brihatkatha* of Gunadhya. This reference goes back to the earliest days of the Christian era. A Tamil poem of the second century A.D., *Silappadikaram*, refers to Kannadar.[26] Speaking of a Karnata dynasty in Nepal, the Nepalese Chronicle, *Swayabhupurana*, refers to a Karnata king Nanyadeva, who conquered the whole country in Sravana Sudi 7 of Nepal Samvat 9 or Saka Samvat 811, *i.e*,, 889 A.D., who ruled at Bhatgam and was succeeded by his son Gangadeva who was followed by his son Narasimha-deva. Dr. R. Shama Sastri, from a reference to the Ganga rulers of Mysore, is inclined to suggest that the reference may be to the Ganga king called Nanniyadeva, who was also known as Bhutuga.[27]

According to the Ceylonese Chronicle, *Mahawanso*, in the third century B.C., on the despatch of missionaries to foreign parts after the third Convocation, for the establishment of Buddhism, the thêra Mahadeva was deputed to Mahishamandala, and the thêra Rakkita to Wanawase, *i.e.*, Banavase just outside the borders of the Sorab taluk, in the Shimoga district.[28] Banavase, the capital of the Kadamba kingdom, is mentioned in the edicts of Asoka, and was known as Vaijayanti or Jayanti. Asoka's mission to Mysore gains confirmation from his inscriptions at Brahmagiri, Siddapura and Jatinga Ramesvara Hill, in the Molakalmuru taluk of the Chitaldroog district.

The Kadambas were of Brahmin descent and an independent dynasty ruling in the districts now comprising North and South Kanara and western Mysore, up to the sixth century A.D. Mayuravarman, the first king of the Kadambas, conquered the country by fighting the Pallavas who must have succeeded the Nagas.[29] A Banavase inscription, said to belong to the first or second century A.D.[30] calls the country round Nagakhanda. A lead coin found in 1888,* at Chandravalli near Chitaldroog bears the name of Sadakana–Katalaya–Maharathi. An inscription of Malavalli, Shikarpur

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24. *The Periplus of the Erythrean Sea*, by W. H. Schoff (1912), Longmans Green & Co., § 53, p. 205.
25. *Ib.*, p. 43, § 50.
26. *Lives of Kannada Poets*, Intro. xv.
27. *Mys. Arch. Rep. for* 1926, pp. 26-27. 28. See chap. XII.
29. *Ancient History of the Deccan*, by G. Jouveau-Dubreuil (1920), p. 57.
30. *Mysore and Coorg*: B. L. Rice, p. 202.

* Now in the Museum, Bangalore.

taluk, Shimoga district,[31] belongs to the second year of Haritaputa–Vinhukonda–Chutakula Manda-Satakarni, king of Vaijayanti and the Banavase inscription referred to is of his 12th year. This king had a daughter who joined her son in the making of a gift to a Naga. The son was called Sata or Sivaskanda–Naga–Sri. The lady was the wife of a Maharathi.[32] From these, Mons. Dubreuil concludes that the Chutus succeeded the Andhras in Mysore and in Aparanta near Bombay. Sivaskanda–Naga–Sri may have ruled over the territory of Chitaldroog.[33] His name was remembered even in the time of the Kadambas.[34] Further, coins containing the image of a ship with two masts are found almost exclusively on the coast between Madras and Cuddalore, with the legend Sri-Pulamāvi (Rapson). The Ujjain symbol indicates the Satavahana dynasty, who therefore ruled over Kanchi. Again, another inscription of the last king of that dynasty, a Pulamāvi, shows that prince Skanda-Naga was his great general. Nagas were powerful when the Satavahana dynasty came to an end. One of these royal families of Naga origin took their place and were called Chutus. Almost all the ancient Pallava kings were their contemporaries and ultimately succeeded them.[35] Referring to the existence of Indians in Armenia between B.C. 130 and A.D. 300, Mr. J. Kennedy says that two Indian chiefs, Gisane (Kisane) and Demetr (Temetr), rebelling unsuccessfully against the king Dinaskhe (Dinaskey), fled westward with their clan and found shelter with Valarshak, or Valarsaces, the first Arsacide Monarch of Armenia (149-127 B.C.). They founded Vishap or Dragon (Town). In the neighbouring town of Ashishat, the pantheon of all the gods of Armenia, they set up replicas of the idols they worshipped in India. Fifteen years later, they were murdered by the king. Their sons Kouar (Guevar), Meltes (Meghtes), and Horian continued to hold the canton of Taron and divided the land between themselves. Three towns were founded and temples built. In 304 A.D. St. Gregory appeared and overturned their faith, baptising over five thousand idolaters. Vishap in Armenian being Nagpur, these people must have been Naga worshippers.[36]

Banaouasei is mentioned by Ptolemy.[37] Hiuen Tsiang's Kou-Kin-Na-Pu-Lo is said to refer to it. If so, Buddhism was well established in this part of the country.[38]

Like Banavase, Punnata is referred to by Lassen. Ptolemy says beryl is found there. Col. Yule in his map of Ancient India places it near Seringapatam, about seventy miles to the south-east.[39] According to Mr. Rice,

31. *Epigraphia Carnatica*, VII, Sk. 263.
32. *Kanheri Inscription*, No. 1021 of Prof. Luden's list.
33. *Epigraphia Indica*, VII, p. 51.
34. *Dubreuil*, pp. 48-56.
35. *Ib.*, p. 47.
36. *J. R. A. S.* (1904), p. 309.
37. *Ancient India as described by Ptolemy*, by J. W. McCrindle, p. 178.
38. *Life of Hiuen Tsiang*, by Beal (Trubner's Oriental Series), p. 146.
39. *Indian Antiquary*, Vol. XII, p. 13.

Punnata was the name of an ancient division in the extreme south of the old Kongu kingdom, at a later date called Padinad. As regards beryl, the best beryls are, according to Pliny, those which have the greenness of pure sea-water, and come from India, seldom found elsewhere. Padiyur[40] in Onarapuram taluk, Coimbatore district, contained mines which were almost the only source[41] known at the time for good beryls. Few gems were better appreciated by Romans or Indians. Vaniyambadi in the Salem district was also said to possess a mine (R. Sewell).

Tamil Land.

Outside Banavase and Punnata, other references in ancient works happened to be to the towns on the west coast. Those we are concerned with were included in one or other of the kingdoms of the Tamil land, and the Tamil land of the earlier days was much more extensive than now where the Tamil language is spoken and included the Kannada, Malayalam and Tulu-speaking countries. Ceylon was in close touch with the Tamil-speaking mainland. No doubt, the Telugu-speaking country was noted for its cotton manufactures and diamond mines but commerce supplied the wealth required for civilized life and the Dravidian was not afraid to cross the seas. The sea-borne foreign trade of the Tamil states was due to its wealth in gold, pearls, conch shells, pepper, beryls and choice cotton goods.[42]

Wealthy cities sprang up in the south. Their material civilization was of a high degree and attracted the attention of other powers. Megasthenes heard of the power of the Pandyan kingdom, and the names of the states of Pandya, Chera and Chola are mentioned in Asoka's edicts.[43] Asoka mentioned a fourth minor kingdom Keralaputra, later on absorbed in the Pandyan kingdom.

While the Mauryan Empire, even during Asoka's days, did not extend beyond northern Mysore, and the Kushān and Gupta empires were confined to the north of India, the Andhras who were reckoned powerful even in the time of Magasthenes and whose historical dynasty may have been established about the time of Asoka's death, are found exercising authority in the regions of the Western Ghats soon afterwards.[44] Their dominion stretched right across the Deccan from sea to sea and they engaged in wars with both the dynasties of the Western Satraps, *viz.*, the early Kshaharata line with its capital in the Western Ghats and the somewhat later family ruling in Ujjain. Both the Satrap dynasties were of foreign origin, and associated with the Sakas.[45] The Andhra kings assumed the position of protectors of Hinduism

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40. 60 miles from the Mysore frontier, (R. Sewell).
41. *Early History of India*, Vincent Smith, p. 400.
42. *Ox. His. Ind.*, pp. 14-15.
43. The Second Rock Edict of Asoka. See *Asoka*: Vincent A. Smith, p. 115.
44. *Ox His. India*, p. 119.
45. "Traces of a Scythic descent are to be found among the Kattees of Kattywar at this day"—Letter from Sir G. le. G. Jacob, read at the Royal Asiatic Society. Feb. 19, 1872.

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and of the caste institution. The most powerful of the later Andhras was Gautamīputra Yagna Srī who reigned about A.D. 173-202.

The Pandyan kingdom[46] extended from Nelcynda to Komar,[47] its western boundary being the southern range of the Western Ghats,[48] and with the increase in the direct trade with the west, the name Pandion became better known at Alexandria than that of Porus and ultimately took its place. About 20 B.C. the Pandions were the only Indians who had realized[49] the advantages of a European alliance. The 'Pandion' of the first Roman embassy was said to be a Rana of Ougein. Lythic records in the Pandya country are in the alphabet of the Asokan period. Buddhist faith had been firmly established in the very centre of Malabar, in a place called Sri-Mula-Vasam, now under the sea. As in the early coinage of the Greeks, the heraldic symbol served with the Pandion as a stamp of authority and a fish was used for the purpose. Roman soldiers were enlisted in the service of the Pandions and other Tamil kings.[50] Their tents were guarded by powerful Yavanas.[51] Yavana ladies are said to have carried arrows and given them to the kings when required while hunting, etc.[52] In the *Mahabharata*, reference can be found to the *Yavana* wives of Saindhava.

While the Pandyan kingdom, the earliest of the three Tamil states, extended beyond the Ghats and included Travancore,[53] it was later on divided before the time of the Asokan inscriptions.[53a] Before the fourth century A.D. the Chera dominions comprised the western coast known as Kerala as far as Gokarna and Goa, and Kerala was administered by Viceroys residing at Muziris (Cranganore).[54] The coast country from and beyond the Pandion kingdom was the Chola, *i.e.*, Coromandel, the largest, richest and the most prosperous—the Ma'abar of the Saracens. The Chola fleet sailed up to the mouths of the Irawady and the Ganges and to the distant Malayan Archipelago.[55]

The most important of the highways of the ancient world were those that joined Nineveh and Babylon to the Deccan and Pataliputra, or Egypt and Arabia to Ceylon and China.[56] The Yue-Chi, Indo-Scythian or Kushān kings of the first and second centuries A.D., evidently maintained active commercial relations with the Roman empire, while they attempted at the

46. *Periplus*, p. 80, § 54, p. 211.
47. *i.e.*, is included the Tinnevelly district and extended as far north as the Palghat gap.
48. *Mt. Bettigo of Ptolemy*, p. 59.
49. *Ancient Indian Shipping and Maritime Activity*: Dr. Radhakumud Mukerji, pp. 137-8.
50. *Early His. Ind.*, pp. 400-401.
51. *Cf. Tamils 1800 Years Ago*, by Kanakasabhai.
52. This information is given to me by a Kannada scholar who prefers anonymity.
53. *Periplus*, § 54, p. 211.
53(*a*) *Ib.*, p. 238.
54. Eliot, *Coins of India*, p. 3.
55. *Ox. His. Ind.*, p. 144.
56. *Footfalls of Indian History*, by Sister Nivedita, p. 94.

same time to extend their trade eastwards.[57] Maritime activity prior to the days of the Portuguese was confined to commerce and no thought was given to occupation or conquest. From Southern India were exported goods by sea to the Roman provinces, or through the overland routes in the north, and were paid for with Roman gold.[58]

In ancient times, parts of the west coast were called the Pirate Coast. Ariake in Ptolemy's time was divided among three chiefs, one of whom belonged to the dynasty of Sadineis and ruled the wealthy commercial people occupying the sea-board. According to the *Periplus*, Sandanes, after becoming master of Kalliena (Kalyana), formerly of the house of Saraganes the Elder, subjected its trade to the severest restrictions. Thus, if Greek vessels entered its port even accidentally, they were seized and sent under guard to Barygaza, the seat of authority.[59] Lassen suggests Sandanes to have been the agent or representative and Saraganes one of the great Satakarni or Andhra dynasty.

The coast of Konkan was well known as the pirate coast. It extended from about Chaul to Nitra, the Mangaruta of Kosmas and the present Mangalore. Richly freighted merchantmen continually plying along the coast, particularly those which left the Egyptian ports for India, carried troops on board well armed for their defence. As against this statement of Pliny, Mr. Campbell suggests that by *Ariake Andron Pieraton*, Ptolemy did not mean the pirates at all but was referring to the Andhra-bhrityas who ruled over the Konkan and some parts of the Deccan.[60] J. W. McCrindle, however, says the reference is to the pirates. According to him, from the few words in the *Periplus*[61]—and in these places there are pirates—the inference is that the south Konkan and Kanara were more particularly infested by pirates. This is the fourth minor or Satiya kingdom of the Asokan inscriptions.

The antiquity of Hindu trade in East Africa is established by Speke.[62] The Puranas describe the mountains of the moon and the Nyanza lakes, and refer to the source of the Nile as 'The Country of Amara'—the name of the district lying north of the Victoria Nyanza. The interested reader is referred to a most illuminating article contributed to the *Asiatic Researches*, instituted in Bengal, Vol. III (1799), No. XIII on Egypt and other countries adjacent to the Nile from the *Ancient Books of the Hindus* by Lt. Francis Wilford. On page 297 of that volume, he says—" It appears, indeed, that a free communication

57. *Ox. His. Ind.*, p. 141.

58. C. J. Brown: *Coins of India* (Heritage of India Series), p. 34. Pliny laments the drain of Roman gold, year by year.

59. *Ptolemy*, p. 39.

60. *Bombay Gazetteer*, (Thana District), Vol. II, p. 415 n.

61. § 53, pp. 203-204. 62. *Discovery of the Source of the Nile*, Chaps. I, V and X.

formerly subsisted between Egypt and India, since Ptolemy acknowledges himself indebted for much information to many learned *Indians* whom he had seen at Alexandria; and Lucian informs us that pilgrims from *India* resorted to Hierapolis in Syria: which place is called in the Puranas, at least it appears to me, *Mahabhaga*, or the station of the Goddess *Devi*, with that epithet. Even to this day the *Hindus* occasionally visit, as I am assured, the two *Jwala-Mukhis*, or springs of Naptha in Cusha-Dwipa within; the first of which dedicated to the same goddess, with the epithet *Anayasa*, is not far from the Tigris; and Strabo mentions a temple, on that very spot, inscribed to the Goddess *Anaias*." The second one, a spring with a flaming mouth, is near Baku, when the Hindus attempted to visit the sacred islands in the West. He also refers to the account of Cornelius Nepos that certain Indi or Hindus were shipwrecked on the shores of the Baltic, but conjectures it was a pilgrimage,[63] while it was in the course of a voyage of commerce according to McCrindle that these Indians were driven by storm into Germany, and Q. Mettelus Celer received them from the king of the Suevi.[64] Lt. Wilford says that he believes in the assertion of the Brahmin Pandits, after examining their sacred books, that a great intercourse anciently subsisted between India and countries in the West.[65]

Lt. Wilford has taken enormous trouble to decipher the Puranic legends regarding Egypt and has given maps illustrating his identification.

Calitata was Ethiopia, Nubia and Egypt; Nile takes its rise from the lake of the Gods—Amara—in the region of Sharma, between the mountains of Ajagara and Sitanta, parts of Somagiri or Mountain of the Moon, etc.[66]

In page 327 *et. seq.* of the same volume, we find a detailed reference to the Krishna legend and the Yaduvamsa. "During the infancy, however, of Krishna, the persecuted[67] Yadavas emigrated from India, and retired to the mountain of the exterior Cusha-Dwipa or Abbysinia." Their leader was Yatu and they are called Yadavas. The mountains are called after them. The people are now called Ourémidré or Ardwemidré, *i.e.*, the land of Arwe, the first king of that country. The Indian emigrants are described as a blameless, pious and sacred race and the genuine Ethiopians are said by Stephanus of Byzantium, by Eusebius, by Philostratus, by Eustathius, and others to have come originally from India under the guidance of Actus, or Yatu.[68] I must leave you to the volume of Wilford for any detailed references; I may, however, in passing, invite your attention to the following:[69] "Such have been, according to the Puranas, the various emigrations from India to Cusha-Dwipa; and hence part of Africa was called India by the

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63. P. 297.
64. McCrindle: *Ancient India*, p. 110.
65. P. 298.
66. P. 303.
67. By Kamsa.
68. P. 328.
69. P. 367.

Greeks. The Nile, says Theophylact, flows through Libya, Ethiopia and India. The people of Mauritania are said, by Strabo, to have been Indians or Hindus, and Abbysinia was called Middle India in the time of Marco Paolo. Where Ovid speaks of Andromeda, he asserts that she came from India; but ....the scene of her adventures was the region adjacent to the Nile. The country between the Caspian and Euxine had the names both of India and Ethiopia. Even Arachoṣia is called White India by Isidorus ;.........Yellow India of the Persians, and the yellow Indians of the Turkish geographers (are mentioned).........we are positively assured by Herodotus that the Oriental Ethiopians were Indians; and hence we may infer that India was known to the Greeks, in the age of Homer, by the name of Eastern Ethiopia............"

The Hindu trade with Abbysinians, etc., in existence before the birth of Christ is also referred to in the *Periplus*.[70] Indians had also settled in Arabia.[71] In the early centuries of the Christian era, they were settling down on the Chinese coast. Berossus writing *c.* 350 B.C. says crowds of strangers lived in Babylon. Babylon, after its destruction by Sennacherib, was rebuilt and beautified (seventh and sixth centuries B.C.). It overthrew its rival Nineveh. With Nebuchadnezzar, she became the wonder of the world and the greatness lay in her vast and expanding trade with the East.

The Greeks must have heard of India and the river Indus as early as the sixth century B.C. as Hecateus refers to it in his *Geographical Treatise*.[72] In the fourth century B.C. Alexander's tutor wanted him to get him an Indian scholar. Pythagoras who had visited Egypt was considered to be a disciple of the Brahmins.[73] According to Plutarch, Homer read in Asia and the children of the Persians, Susians and Gedrocians sang the tragedies of Euripides and Sophocles. One Kalanos, a Gymnosophist at Taxila, left India with Alexander the Great, and burned himself on a funeral pyre at Sousa. The founding of Alexander's Empire brought to the East an expansion of Greek culture and promoted an exchange of commodities. In the words of Plutarch, Alexander's deeds civilized Asia. Diodorus (later half of first century B.C. and early A.D.) refers to the king of Palibothra as a lover of the Greeks. Dio Chrysostom's (the age of Plutarch) Orations confirm that Homer's poems were sung by the Indians who had translated them into their own language. Aelian, a contemporary of Philostrastus, refers to Indians and the kings of Persia as translating and singing Homer. Apollonius of Tyana travelled with Damus and was for four years a guest of the Brahmins in the

70. § 14, p. 87 ; § 53, pp. 203-204. 71. Lassen: *Ind. Alter.*, II, p. 150.

72. Prior to Alexander, India was known to the Greeks as a country which by sea was to be reached by way of the Euphrates and the Persian Gulf—*India as known to the Ancient World* by Gauranganath Banerji, p. 10.

73. *Frag. His.*, III, §§ 238-239. See Apollonius of Tyana's *Indian Travels.*

first half century A.D. Born about 4 B.C., he came to explore the wonders of India and get acquainted with the learning and wisdom of the Brahmins. He was a Pythagorian philosopher and met Iarchas at Taxila and disputed with Indian Gymnosophists. He reached India through Khorasan, the Hindukush and the kingdom of Kabul. The *Periplus* of the Erythrean Sea (81, 96 A.D.) was a manual of Roman, or to be more exact, Egyptian trade with India. The geography of Ptolemy (A.D. 138, 161) belongs to the reign of Antoninus Pius. The expedition of Alexander and the Indica of Arrian belongs to the period A.D. 150-160. Strabo who was born about 63 B.C. and who was living in A.D. 21, Pliny who laments the annual drain of Roman gold to India, *viz.*, 550 mill. sesterces (80 lakhs) have already been referred to. The life of Apollonius of Tyana was published by Philostrastus after A.D. 217. Clemens of Alexandria (*d.* 220 A.D.), Archelaus of Carrhe (278 A.D.), Hierocles who visited and travelled in India in the fifth century A.D. and describes the Brahmins as abstaining from flesh meat, are among the others who wrote on India.

Great cities in the East sprang up and by means of their intellectual and material civilization were destined to be the centres of a new empire. Moneys long stored up circulated in the markets; the philosophy of the Vedanta and the Upanishads as well as the Astronomy of the Chaldæans became available to the Greeks.[74]

Several distinct trade routes on sea, as by land, sprang up and it was found that the sea voyage round the Makrān coast was not difficult. Exchange of ideas between India and Europe became more frequent with the formation of Greek kingdoms in Western Asia. About the middle of the third century B.C. was established the Graeco-Bactrian monarchy and certain Indian districts were subdued by Greek kings. The Hellenic influence on Indian art, the modification in Buddhist teaching by contact with the Greek gods, and the influence of Buddhist ideas on Christian doctrine are referred to as some of the results. 'The notions of Indian philosophy and religion which filtered into the Roman Empire flowed through channels opened by Alexander,'[75] for Europe was till then almost ignorant of India.

Egypt had become wealthy mainly owing to the Indian trade and her trade with Arabia Felix. They were carried from the ports of the Red Sea to the Mediterranean but it was not known whence the trade came. They were carried by the Arabs through the deserts to the Persian Gulf and from there to Cossier and to the Troglodytic Berenice[76] on the opposite coast.

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74. G. N. Banerji : *India*, p. 718. 75. *Ox. His. Ind.*, p. 67.

76. Sea-port on the southern frontier of Egypt where the Romans met the fleet intended for India. Mussel harbour, *i.e.*, Myos Hormos or Ras Abu Somar was the principal port of Egyptian trade with India.

In the course of these attempts at cheaper means of getting Indian products, the Greek sailors of Euergetes made a settlement in the island of Dioscorides (Socotra) in the Indian Ocean and there met the trading vessels from India and Ceylon. Greek was the only language spoken there till it fell under the Arabs.

Pliny says : " To those who are bound for India, Ocelis is the best place for embarkation. If the wind called Hippalus happens to be blowing, it is possible to arrive in forty days at the nearest mart in India, called Muziris. This, however, is not a desirable place for disembarkation, on account of the pirates which frequent its vicinity; nor is it very rich in articles of merchandise. Besides the roadstead for shipping is at a considerable distance from the shore, and the cargoes have to be conveyed in boats either for loading or discharging.

" At the time I am writing these pages, the name of the king of the place is Caelobotrus. Another port and a much more convenient one is that which lies in the territory of the people called Nelcyndi, Bacare by name. Here king Pandion used to reign, dwelling at a considerable distance from the mart in the interior, at a city known as Madeira."

By the time of Herodotus, the navigation of the Red Sea had been established. Frankincense and myrrh of Arabia Felix and cinnamon and cassia from beyond India or Ceylon were supplied. Tides are referred to as a phenomenon. Skylax's voyage from the Indus to the Persian Gulf and cotton and bamboos of India and the gold-digging ants as large as foxes are referred to.

The commerce of Ethiopia, India, Arabia and Egypt itself converged on the cosmopolitan city of Alexandria. Before the discovery of the monsoons and the time of Claudius, Indian trade through Egypt with Europe was not much. In 20 B.C. there was a mission to Augustus from 'king Pandion', the Pandya king of Madura, in southern India. Strabo attributes the embassy to a Pandion rather than a Porus but connects it with the Indian who burned himself at Athens. At Antioch, about 22 B.C., these Indian ambassadors, perhaps, were met on their way to Augustus Cæsar by Epidaphne Nicolas Damascenus and their letter of credentials was in Greek.[77] Allusions to this first Roman embassy are made by Horace in his Odes. Florus and Suetonius refer to it. Dio Cassius (194 A.D.) speaks of its reception at Samos (B.C. 22-20) and mentions Zarmanos as accompanying it. Hieronymus (A.D. 380) in his translation of the *Canon Chronicon* of Eusebius alludes to it but places it in 26 B.C. (third year of the 188th Olympiad). Plutarch refers to an Indian in the suite of Augustus who put an end to his life and to his monument being known as the Indian's tomb. " Zarmanochegas, an Indian, a native of Bargosa, having immortalized himself according to the custom of his country, here lies"

77. Alexander Polyhistor : *Frag. His.*, § 91,4-419.

—is the inscription at Athens on the tomb of the Indian. Damascenus suggests he was either accompanying the embassy or was attached to it though the letter was stated to be in the name of Porus. According to Apollonius of Tyana, he may be a Hindu, bearing a name Zarmanos Chegan, Sanskrit Çramanacharya, which points him out as of the Buddhist faith, and as proved by his death, a priest earnest in his faith. His companions may have also been Hindus, and perhaps the representatives of a Hindu and possibly a Buddhist prince.[78] "Whether because he was of the Sophists and therefore out of emulation, or whether because he was old and it was the custom of his country, or whether as a show to the Athenians and Augustus who had gone to Athens, expressed the determination to die and put an end to his existence. And having been firstly initiated in the mysteries of the two gods held out of their due course for the initiation of Augustus, he afterwards threw himself into the burning pile."[79]

The period of the first Roman embassy was the time when India was over-run by the Yue-chi. About 25 B.C. Kujula Kadphises (Yue-chi) subdued the modern Afghanistan and about A.D. 10, Huomo Kadphises conquered north-west India. The Indo-Scythian Empire followed in the wake. The Scythian, though subject to the Parthian kings, occupied the lower Indus. "The Buddhist influence thus spread in Asia and Eastern Turkistan became the bridge on which the Indian manners and customs and above all Indian religion passed both to China and Central Asia."[80] Indo-Greek and Indo-Parthian princes continued to govern the principalities in the Kabul and on the North-West Frontier. Gondophernes reigned between A.D. 20 and A.D. 48. The name is said to be Parthian or Persian. St. Thomas, according to early legends, is considered to have preached Christianity in his dominions. There is also another tradition according to which the Apostle Thomas was martyrized at Mailāpm (Mylapore) near Madras.[81]

Trade between south India and the Roman Empire was extensive in the first and second centuries A.D. It first started in the luxuries of life[82] and later extended to cotton and industrial products. The discovery of the monsoon helped its expansion. It was largest from Augustus to Nero (A.D. 68). It was checked and perhaps temporarily stopped by Caracalla's massacre of the people of Alexandria in A.D. 215. Under the Byzantines, the trade was with south-west India, *i.e.*, Travancore and south-west coast, and commerce with the Deccan and the interior declined.[83]

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78. P. 78. 79. *Cf.* Dio Cassius. 80. G. N. Banerji : *India*, pp. 33 and 36.

81. V. A. Smith agrees with the later tradition. *Ox. His. India*, p. 126.

82. *e.g.* pepper, spices, fine muslin, perfumes, unguents, pearls, precious stones.

83. In the Flavian period there was exclusive trade with the Malabar coast. G. N. Banerji : *India*, p. 24. *Cf.* also *J.R.A.S.* (*1904*), p. 591. [Sewell concludes from coins discovered in India.]

The second embassy belongs to the first half century A.D. According to the *Periplus* it was in 41 A.D. Pliny gives the story of the second embassy. It was the result of an accident. A freedman of Annius Plocamus[84] was carried off by a gale to Hippuros,[85] a port of Ceylon, where he was hospitably and kindly received. The Raja of Ceylon learnt the principles of the Roman justice from him and the visit culminated in an alliance. Rachias and three others[86] were sent to Rome. Plocamus learnt the language of the country he visited in about six months. On the next occasion, Sopater was sent from Rome and presented to the Ceylonese monarch, who was called Chandra Mukha Siva (41-52 A.D.)[87] The ambassadors from Ceylon in Rome spoke a language which had not previously been heard there and which the freedman of Plocamus alone could interpret and with which even he was but imperfectly acquainted.

It must be pointed out that Donald Fergusson suggests Pliny's Taprobanian embassy did not come from Ceylon but Sumatra was Taprobane.[88]

An Indian embassy during Trajan's time (107 A.D.) is said to have been present at the shows given by the Emperor to his people. There is a suggestion that it may have been despatched by Kadphises II (Yue-chi) announcing his conquest of North-Western India.[89]

Strabo says : A certain Indian, as he was discovered to be afterwards, was brought to the king of Egypt by the coast guards of the recesses of the Arabian Gulf, who said they had found him half dead and alone on a stranded ship, but that they did not know who he was or whence he came, since they did not understand his language, and he could not speak Koptic. The king Eurgetes II (B.C. 146-117 ?) gave him to the charge of the man who would teach him Greek. After he had learnt Greek, the Indian explained that on his voyage from India, by a strange mischance he mistook his course and reached Egypt in safety, but only after having lost all his companions by starvation. His story was doubted : he then promised to guide the king's men to India. Eudoxus of Cyzicus went to and returned from India with a cargo of perfumes and precious stones. He went again a second time and came

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84. *Periplus*, p. 8.

85. The Ophir of Solomon. *Cf.* Lassen, Kudremala—a port of Ceylon, on the Arippo-ar. Ptolemy (p. 44) places a Hippocura on the Malabar coast. Others refer to Ghoda-bandar on the Thana Strait. Ghoregaon in Kolaba (Mr. Campbell). Many places could so claim the identification. If the Greek traders did not translate but adapted native names to their own pronunciation and idiom, what would be the result?

86. They told Pliny of the Serae, who dwelt beyond the Mounts of Emodi, whom Rachia's father had visited and who would trade with and show themselves to the people. Referring to this in *J.R.A.S.* (1904), J Kennedy says: The Cheras occupied Mysore at this time ; their territory extended to the sea. The ambassador's reference to a fair race, etc., compares with the description of Sulemain in the ninth century A.D.

87. G.N. Banerji: *India*, p. 23. 88. *J.R.A.S.* (1904), p. 541. 89. *Periplus*, p. 187.

across people whom he had to conciliate and made a list of some of their words. He set sail again a third time on a great ship with two masted boats as those of pirates. He put music girls on board, and physicians and other artisans. He finally came to people who spoke the same words as those he had made a list of before and learnt they were the same men as other Ethiopians and neighbours of the kingdom of Bogus. He did not reach India.[90] According to Strabo, young female musicians of Western origin were articles of import, certain to please in India. Professionally there was little to choose between them and the 'young well-made girls intended for debauchery' offered by the Greeks to the kings of the ports of Gujrat along with musical instruments.[91]

Clemens of Alexandria (192--217 A.D.) says that Brahmins despised death and set no value on life because they believed in the transmigration of souls and the Semnoi (Buddhist Sramanas) worshipped a kind of pyramid, beneath which they imagined that the bones of a divinity of some kind lay buried. He distinguished clearly between Bramanai and Brachmanai.[92] He referred to Brahmins as neither drinking wine nor tasting animal food.

Callistratus (A.D. 250) describes a statue of a drunken and reeling Hindu.

Archelaus of Carrhe (278 A.D.) and St. Jerome both mention Buddha by name. India and Buddha occur in his account of his disputation with the heresiarch Manes at Chana in Mesopotamia and Cedeenus refers to Manes as a Brahman. Buddha's story was given in the eighth century A.D. by John of Damascus as the life of a Christian Saint. Buddha himself has been canonized by the Christian Church as St. Josephat (ಬೋಧಿಸತ್ತ) and included in the mythology of Pope Gregory XIII. According to Richard Garbe and V. A. Smith, Buddhism influenced the early development of Christianity which in its turn coloured some of the later Hindu doctrines and creeds.[93]

Dionysaics (A.D. 360—420) is a poem in forty-eight books written by Nonnus of Panoplis in Egypt to celebrate the triumphs of Bacchus and his conquest of India. It is often regarded as a Western version of the *Mahabharata*. Bacchus encounters and makes drunk and captive an Indian army under the Astrais in Bithynia near the lake Astracis. Later on, he meets and defeats, in Syria, a powerful army commanded by the son-in-law of the

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90. Strabo, Book 2, 3, 3-4. Strabo did not believe the story he narrated.

91. *Ind. Ant.* (1904), Vol. XXXIII, p. 12.

92. The reference in ancient works to *Brahmanai Magoi* is said to mean sons of the Brahmans (G. C. Campbell). It is further said that by this reference Ptolemy implied a colony of Persian priests settled in India or Brahmans who had adopted the tenets of the Magi. It is interesting to recollect the existence of *Haiga Makkalu* in the Shimoga district.

93. *Cf.* Kalidas Nag : *Greater India.*

Indian king Deriades (Duryodhana).[94] After the Syrian encounter, Blemmys, king of the Erythrean Indus but subject to Deriades, submits to Bacchus and settles with his people in Ethiopia.

Thus we find that for thousands of years before the Greeks grew out of the savage state or prior to the Phœnician exploits in the Mediterranean or the Atlantic, the countries around the Persian Gulf were the home of civilization and culture. Gradually, Egypt and Ancient India entered into the group but the centre of trade continued as before. The growth of civilization in Ancient India was responsible for an active merchant marine trading to the Euphrates and the Tigris and to the Eastern Seas. The Greeks overcame the jealousy of the Arab traders on the African coast in course of time, who, however, mostly retained the commerce of the Red Sea. Precious stones, spices and incense went in increasing quantities for the service of the Egyptian gods, from India[95].

In course of time, the centre of gravity shifted beyond the valley of the Nile and the Euphrates to the peoples of the north and the succeeding centuries witnessed the struggle for the discovery and mastery of the routes through which Indian trade passed[96]. Gradually, the Romans acquired a taste for the precious things of the East. They had to pay tolls to the Parthian Empire and to the Arabic kingdoms. They tried to avoid it and get control of the sea-borne route to India.

Maritime activity was chiefly in the hands of the Dravidians though the Aryans had a share in it. The Indian traders settling in Arabia, Africa and on the coast of China must have included a large percentage of Dravidians. As early as the third century B.C., Berossus has recorded the presence of crowds of strangers in Babylon.

The division of the Greek nation, occupying an important social position in the Roman Empire, comprised some of the Macedonians; and the cities of Alexandria and Antioch, the second and third cities in the Empire for wealth, population, size and influence were chiefly peopled by Greeks.[97] Philosophy lent a splendour to the Greek name. The teachings of the Indian sages were echoed and reflected in the Western world.[98] After the Antonines, the real representatives of the intellectual supremacy of the Hellenic race were to be found in the cities of Asia, Egypt and Syria.[99] Greek art is said

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94. He was known in Greece through the Greeks who had visited India or the Hindus who visited Alexandria. We also know that the relations of the Bactrian Greeks with the Hindus were many and intimate. Dionysius is Gisane or Krishna. *Cf*. Lt. Wilford's article on 'Egypt and the Nile' already referred to.

95. *Periplus*, Intro., pp. 3—4.

96. *Ib*., Intro., p. 4.

97. George Finlay: *Greece under the Romans*, pp. 84—5.

98. G. N. Banerji: *India*, p. 15.

99. Finlay, p. 102.

to be reflected in the Gandhara School of sculpture and to have lived on for many years till its absorption in the hands of Indians.[100] The Indian custom of ornamenting golden vessels was adopted in the sphere of Greek culture and the Indian Jacinth became a favourite material with lapidaries. Indian precious stones and Indian fables influenced Greek travellers' tales.[101]

The Greek invader found in India an ancient and highly developed society and much as it is to-day, in the matter of living, usages and customs, in size and population, etc.[102] In the wake of Alexander's invasions, Greek settlements were established in the Punjab and the North-Western Frontier and the existence of the Bactrian kingdom and its off-shoots between 246 B.C. and 50 A.D. helped their development.[103] The Indo-Bactrians were even said to be the Goanese of antiquity.[104] Saka invasions from the second century B.C. resulted in the establishment of Saka kingdoms in the Punjab, at Muttra and the Kathiawar Peninsula.[105]

Greek authors of 300 B.C. refer to caste and ceremonial purity[106] as relating to the Hindus. Regulations of the Mauryans regarding 'finding lodging for foreigners, to keep them under observation, to escort them out of the country, and in case of sickness or death to provide for the treatment or burial of the stranger, whose property they were obliged to protect and account for' implies constant intercourse with outside states and visits to the capital on business by strangers. The Mauryan Empire levied tolls on trade and the identity stamp was called *Abhijnana Mudra*.[107]

Buddhist and Brahminical writings testify to the existence of trade in the fifth century B.C. with the Persian Gulf, the coasts of Arabia and Africa.[108] Ujjain (capital of Avanti, *i.e.*, Malva) in the seventh century B.C. is one of the seven sacred cities, rivalling Benares, according to the discoveries in Taxila.[109]

This sea trade in the Indian Ocean was carried on largely in native Dravidian craft. It had great influence in the interchange of ideas as well as products. The goods sought after by the foreign merchants on the Indian coast were pearls from the fisheries of the Tampraparni river in the Tinnevelly district; beryls, gold[110] and corundum from Mysore and Coimbatore; pepper and the other spices from the Malabar coast. Muziris or Cranganore,

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100. G. N. Banerji: *Hellenism in Ancient India*, p. 15; *cf.* E. B. Havel and Sister Nivedita dispute the theory of this influence.

101. *Arts of the Greeks*, Vol. I. From the *Cabinet Cyclopædia* (1833), p. 20.

102. *Anglo-American Magazine* for 1901, pp. 294—306.

103. *Ox. His. Ind.*, p. 8.

104. *Ib.*, p. 143.

105. *Ib.*, p. 8.

106. *Ib.*, p. 37.

107. *Ib.*, p. 88.

108. *Periplus*, § 54, p. 209.

109. *Ib.*, p. 44.

110. Pliny mentions gold on the Malabar Coast, apparently from the mines in Mysore; *cf.* *Periplus*, § 63, p. 259.

and Bakarai or Vaikkarai, the haven of Kottayam, in the Travancore State were the principal ports where, as in several other places, there is reason to believe, Roman subjects were living. Korkai on the Tampraparni river was the chief centre for the pearl fisheries. Puhar, also named Kaveripaddinam, then at the mouth of the river Cauvery was for some time a rich and thriving port. It, with the other ancient ports there, is now desolate owing to an elevation in the coast line.[111] "The utter destruction of the once wealthy commercial cities of Korkai and Kayal on the Tinnevelly coast, now miles from the sea and buried in sand dunes, ceases to be a mystery," if we remember "that the coast level has risen. In other localities, some not very distant from the places named, the converse has happened, and the sea has advanced, or in other words, the land has sunk."[112] In either case the signs of the existence of early trade have been obliterated.

We may conclude that in all probability the earliest inhabitants of India settled on the ancient high and dry land of the Peninsula, and not in the northern plains.[113] According to Kautilya also the commerce with the south was of greater importance than that with the north, the more precious commodities coming from the Peninsula. He says that while the northern regions supplied only blankets, skins, and horses, gold, diamonds, pearls, other gems, and conch shells came from the south. The Tampraparni river, the Pandya country and Ceylon are named. Textiles came from the Konkan. Commerce by land and sea with foreign countries was regulated by many ordinances, and passports were required by all persons entering or leaving India.[114]

Evidence is also furnished by the Dravidian alphabet, supposed to be from a semitic (Himyaritic, or Phœnician) original, and to date from about 1000 B.C. against the Aryan of Kharosthi which was formulated about B.C. 500 after the conquest.[115]

Coins.

Evidence derived from the existence of coins in India next claim our attention. Coins of Azes (50 B.C.) contain the names of sovereigns with proper inflexions and they could not have been copied from any existing die. This suggests a familiarity with the Greek language in the north-western provinces of India and if the suggestion that the first embassy to Rome came from the Punjab be accepted, the Greek language of the credentials can be easily explained. Even the little knowledge we possess regarding the Bactrians, Indo-Greek and Indo-Parthian dynasties is due to inferences from coins.[116] In

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111. *Ox. His. Ind.*, pp. 143—44. 112. *Ib.*, Intro. iv. 113. *Ox. His. Ind.*, p. 5.
114. *Arthasastra*, Book II, Chaps. 2, 11, 16, 28, 34 ; Book VII, chap. 12 ; *Ox. His. Ind.*, p. 68.
115. R. Sewell : *Hindu Period of South India*, "Imp. Gazeteer" II, p. 322.
116. *Ox. His. Ind.*, Intro. xvii.

Peninsular India, the Roman *aureus* circulated as currency like the British sovereign at the present day. By the time of Vespasian, the Roman coin had so naturalized itself that Indians preferred to use it.[117] Pliny lamented the drain of Roman gold to India.

In *J. R. A. S.*, 1904, R. Sewell has detailed the discoveries of Roman coins in South India. They were largest in the neighbourhood of the beryl mines in the Coimbatore district and the adjacent parts of the Madura district. The articles of trade with which Rome was concerned were also the products of South India. The number of coins, besides hoards, discovered there amounted to 612 gold and 1187 silver coins.[118]

MADURA DISTRICT.

1839. A Solidus of *Zeno*.

1856. Sixty-three coins were discovered at Caliempootoor in Iyempully taluk, a place adjacent to the boundary of the Madura and Coimbatore districts.

Dr. Bidie discovered them. They range from B.C. 8 when Drusus was Senior Consul to Commodus A.D. 180-193.

COIMBATORE DISTRICT.

Polachy : 1800. Coins of Augustus and Tiberius were discovered.

1810. Do. They were a potful.

1817. A silver coin of Augustus, and punch-marked Buddhist coins in Paṇḍukulis[119], were found.

Karoor : 1806. Five gold coins of Augustus, Tiberius, Antonia and Claudius were found.

1878. Rev. H. Little discovered a hoard of five hundred coins.

Vellaloor : Four miles east of Coimbatore. 1842. 522 Roman *denarii* of Augustus and Tiberius, including some of Caligula and Claudius were found.

Ootacamund : 1827. A gold Roman coin was discovered by John Sullivan.

117. Mommsen : *Provinces of the Roman Empire*, ii, 300.

118. See p. 525 ; *cf*. Eliot : *Coins of India;* E. Thurstan : *Catalogue of Coins* (No. 2).

119. *Cf.* also C. J. Brown : *Coins of India*, p. 17.

Kannanur : 1850-1 A.D. Five coolie loads of Roman *aurei* were unearthed, by Capt. Drury, in a well-preserved state, belonging from Augustus 29 B.C. to Antoninus Pius A.D. 161.

Cuddapah District : 1838. An aureus of Trajan found.

Nellore : 12-7-1787. Alexander Davidson, Governor of Madras came by Roman coins and metals of Adrian, Faustina and some Trajans.

Sholapur : Fifteen miles from Darpal. 1840. A hoard of Roman coins—of Severus, Antoninus, Commodus, Ducius Vernes, Geta was found.

Col. Tod in 1824 stated that Greek coins were once struck in India, marking a first intermingling of eastern and western culture in India. As already remarked, currency of South India chiefly consisted of Roman gold along with the spherules.[120] Regarding the issue of lead coins, one of which is discovered and belongs to Vasishthi Putra Sri Pulamāvi (A.D. 130 about), which has on its obverse a two-masted ship, Mr. C. J. Brown suggests it was evidently intended for circulation on the Coromandel coast.[121] It is in evidence that a great Saka conqueror, Nahapāna, who founded a kingdom on the Western Ghats in the first century A.D. also reproduced the Greek hemi-drachm.[122] About A.D. 180, Sri Yajna Satakarni struck not only the lead and billon coins as usual but restruck and imitated the silver hemi-drachms of the Satrap Nahapāna.[123] The coins also suggest the establishment of a kingdom in Malwa about A.D. 1 by Chastitana, another Saka chieftain.

The earliest coins assigned to Kurumburs, a pastoral tribe of the North Arcot district, are two-masted ship copper pieces of the third century A.D.[124] The Andhra coins showed a two-masted ship with details like those of the Gujarathi ship at Borebodur and the Persian ship at Ajanta.

From these R. Sewell is led to the conclusion that in all probability Roman merchants continued to reside in South India, either permanently or for sufficiently long periods. The discovery of Roman copper coins in large quantities suggests their daily use.[125] Roman coins may have been exchanged against the spices destined for the Roman kitchens.[126]

The Asiatic and Egyptian Greeks, by virtue of their geographical situation and for the purposes of trade, must have found it necessary to learn the languages of the countries where they lived and to get acquainted with their

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120. C. J. Brown : *Coins*, p. 58.
121. *Ib.*, p. 21.
122. *Ib.*, p. 30.
123. *Ib.*, p. 21.
124. *Cf. Periplus*, p. 244.
125. *J.R.A.S.* (1904), p. 601.
126. McCrindle : *Ancient India*, p. 121.

literature. It does not appear as if the opportunity was used to the full. Nevertheless, though knowledge was confined to the higher classes among the population of Asia and the Alexandrines, literary productions must have been addressed to a public widely dispersed and very dissimilar in tastes and habits.[127] It is quite certain, also, that Indians must have become familiar with the Greek alphabet by Panini's time (fourth century B.C.)[128]

The best elephants came to the West from India.[129] Ivory, apes, peacocks were indigenous to India and the words used in Hebrew to designate them are not Hebrew but Dravidian. An Indian peacock was sent to the king of Egypt as a present and he dedicated it to Jupiter. Export of peacocks to Babylon is referred to in the *Baveru Jataka*, a work of about 400 B.C. Rice (Oryza) is similarly derived from *arisi* in the Dravidian language.[130] Cloves and nutmegs were procurable in the early days only from the Malayan Archipelago. They went to Alexandria about A.D. 180 and the Indo-Malayan trade must have commenced subsequent to the first century A.D. as the *Periplus* does not refer to it. Sandalwood is a native of South India; likewise, ebony, blackwood and teak referred to for the first time in the *Periplus*.

Greek Colonies in India.

The foregoing makes it sufficiently clear that Greek settlements must have existed in South India on a fairly large scale. The following supplementary facts may be given.

In the proximity of Maruvarpakkam, on the beach, were the settlements of Yavana merchants where attractive articles were always exposed for sale. Here also were the quarters of foreign merchants who came from beyond the seas and who spoke various tongues. Kanakasabhai bases this information on the Tamil poems.[131] V.A. Smith in his *Early History of India* agrees and suggests the reference to be to Kaveripattanam. It is *Khaberis*, north of Tranquebar.[132]

If the high quality of Mauryan sculpture was due to a happy blending of Indian, Iranian and Hellenic factors,[133] Greeks must have resided in India forming settlements of their own. The Indo-Greek princes and people so settling in India tended to become Hinduized. A record discovered at Taxila refers to a district officer under an Indo-Greek king as a 'meridiarch', suggesting the use of Greek for official purposes. Our knowledge of English, Persian, Marathi and French confirms the belief that Greek must have been spoken at the time at the courts of the Indo-Greek kings though it may not have spread among the Indian people.[134]

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127. *Finlay:* pp. 10-11. 128. G. N. Banerji: *India*, p. 20. 129. *Ox. His. Ind.*, p. 68.

130. *Periplus*, § 41, Note:—The Egyptian language contains numerous words of Sanscrit origin so much so Francis Buchanan even suggests that the Indians originally went to India from Egypt, *cf. Asiatic Researches*, Vol. III, 1799, p. 7.

131. See *Tamils 1800 Years Ago*, by Kanakasabhai. 133. *Ox. His. Ind.*, p. 140.

132. *Ptolemy*, p. 65. 134. *Ib.*, p. 142.

Greek factories were probably established in the places which were most frequented by Alexandrian ships. The merchants must have consigned their goods to those places and these factories must have managed all their business with the authorities and the people.

Muziris must have been one such. There is reason to believe that Roman subjects lived at this place. Merchants used to sail from Arabian ports to Muziris in July and August and reach it in forty days, completing the return journey in December or January following. The place is identified now with Cranganore, its identification with Mangalore being a mistake. To the Christians it was the landing place of St. Thomas, the Apostle. It is the nearest port to Madura on the west coast.[134a] According to the *Periplus*,[135] it was in the kingdom of Cerebothra. It was full of ships sent there with cargoes from Arabia and the Greeks. It was located on a river. There was a temple for Augustus built there.[136]

The alleged Greek colony of Byzantium on the west coast of India is denied by McCrindle, who suggests Ptolemy's reference to it may be to Vaijayanti or Vijayadurga in the Ratnagiri district.[137]

Karur is said to have been the capital of Limyrike, where Kerobothras, *i.e.*, the Chera Keralaputra, resided.[138] In the Asokan Rock Edict, the Kerala or Chera kingdom was mentioned. It included the Malabar district with the modern Cochin and Travancore States, sometimes extending eastwards. Asoka also mentioned a fourth minor kingdom, the Satiya kingdom. "The kingdom of Satiyaputra must have adjoined Keralaputra; and since the Chandragiri river has always been regarded as the northern boundary of that province, the Satiyaputra kingdom should probably be identified with that portion of the Konkans or low lands between the Western Ghats and the sea, where the Tulu language is spoken, and of which Mangalore is the centre. The name of Kerala is still well remembered and there is no doubt that the kingdom so called was equivalent to the southern Konkans or Malabar coast. The ancient capital was Vanji,[138a] also named Karuvur, the Karoura of Ptolemy, situated close to Cranganore, which represents Muziris, the port for the pepper trade, mentioned by Pliny and the author of the *Periplus* at the end of the first century A.D.[139]

Nitra is identified with Mangalore.[140] Pliny also refers to it.

134(*a*). *J. R. A. S.* (1904), p. 601.

135. p. 51 and §54, p. 44.

136. *Cf.* V. A. Smith and Peutingerian Tables.

137. *Ptolemy*, p. 47.

138. *Ib.*, p. 49.

138(*a*) Is it the same Vanji that dates from the first century A.D. and comprises all the Jews in Travancore? Which is Pukar?

139. V. A. Smith : *Early His.*, pp. 340-1.

140. *Ptolemy*, p. 47.

Tyndis referred to in the *Periplus* is identified with Ponnani, on the river of the same name. The river drains a rich section of the western mountains—the Annamalai Hills and it is a natural terminus for pepper of the hills and the beryls of the Coimbatore district.[141]

Bakare is identified with Kottayam in Travancore. Bakare (Ptolemy, p. 52), Becare (Pliny), Bacare (*Periplus*, 55). The *Periplus* says the kings of Bacare and Nelcynda lived in the interior.

Of the principal ports mentioned in the *Periplus* (§§ 52-3), in the Konkans, North Kanara and North Malabar, it is sufficient to mention Nelcynda. It was said to belong to the Pandyan kingdom. Pepper trade is prominently mentioned. Its situation is near Kottayam.

The Adeisathori referred to is that section of the Western Ghats extending immediately northward from the Coimbatore gap.[142]

Ujjain (Ozeni) was the capital of Malwa. It is inland from its port Barygaza and to its east. It is very prominently mentioned in Buddhist records. In the time of Hiuen Tsiang, Buddhism was on the decline here and at Barygaza, while it was flourishing in Guzerat and in the Konkan.[143] It formed the principal stage on the route from the Deccan to Sravasti, Kosala's capital. Asoka according to the *Mahawanso* was ruling here as Viceroy.

Barygaza or Broach is a trading town at the mouth of the Narmada river, on the west coast of India. The first Roman embassy with the Pandion is stated to have started from this port and proceeded by way of the Red Sea. It was also called Bargosa from Sanscrit Varikatcha. When the *Periplus* was written, it was a place of considerable trade and the commerce of the West first came here. It naturally welcomed opportunities of friendly intercourse with Rome.[144] Ptolemy describes it as the greatest seat of commerce in western India and the capital of a powerful and flourishing state.[145] It was also an important port of the Empire of Chandragupta Maurya.

These references may be said to establish, conclusively, considerable maritime activity and trade between South India and the West and suggest incidentally the existence of Greek settlements on the west coast of India.

It was natural for the Arabs to preserve a secret of their knowledge of the channels of trade with India. Certain accidents helped Rome in her quest of a cheaper method of obtaining materials from India and that directly without the Arab as an intermediary. A Roman subject, perhaps in the Abyssinian service, was driven to sea in an open boat to India with a favourable wind and much information. Subsequently, Hippalus, a venturesome

141. Note:—Dr. Burnell suggests Kadalundi near Beypore.
142. *Periplus*, § 71, p. 164.
143. *Life of Hiuen-Tsiang*, by Beal. iii. 154, 165, 1471.
144. *Apollonius of Tyana*, p. 81.
145. *Ptolemy*, p. 133.

navigator (about A.D. 47) observed the periodic change of the Indian monsoon and made a successful voyage to India and returned richly laden with cargo. Of the articles of merchandise he was unable to secure however, was cinnamon.[146] Indians in their turn directed their attention to the West. They were besides the carriers of the trade to the Western countries from the Further East also. "The Chera backwaters became a meeting place for the trade from the China Sea to the Gulf of Suez".[147]

The civilization of Indo-China came exclusively from the Deccan and was of Indian origin. The Indo-Chinese inscriptions are dated in the Saka era and the alphabets closely resemble those of the Deccan.[148] There is evidence of the existence of this influence in the second century of the Christian era. Ptolemy gives the names of coast towns in Annam which are not merely Indian but Sanscrit. An inscription of a Champa king Sri-Mara or Mura-Raja is in Sanscrit, in an alphabet identical with that of the Rudradaman inscription at Girnar. "The Indo-Chinese civilization did not come from every place in India, but from a port of the Deccan whence the travellers embarked for Indo-China." Gudur near Masulipatam is identified with it. In Ptolemy's time, the whole coast line of Further India was inhabited by the Sindoi (Hindus) and the Brahmanic religion may have gone by the sea.[149] Brahmans from India civilized Siam.[150] The Cambodian Empire was Hinduised by a Brahman Houentieu (Kaundinya) in the first century A.D. according to the Chinese records.[151]

Besides, it was in the second century A.D. that the Chinese lost the command of the highways of Central Asia,[152] and transmarine commerce which was in existence as early as 120 B.C. between India and China got a fresh impetus. In the first century B.C., the Chinese knew India as T'ien-du or T'ienchu, about the time of the introduction of Buddhism into that country,[153] *i. e.*, about 67 A.D.[154]

Malaya and Java are also mentioned by Ptolemy. According to Dr. Fergusson, the Buddhist immigrants to Java came from Gujrat and the mouth of the river Krishna. The Indians of the Coromandel coast first established commercial relations with Indonesia.[155]

Ancient Hindu mariners had light-houses to warn ships, as for example at the port on the mouth of the river Cauvery where there was a big tower on a palmyra trunk carrying on the top of it a huge oil-lamp.[156] It shows

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146. *Ox. His. Ind.*, pp. 5-6.
147. *Periplus*, p. 273.
148. *Dubreuil*, p. 85.
149. G. N. Banerji : *India*, p. 50.
150. *Kalidas Nag*, p. 39.
151. P. C. Bagchi : *India and China*, p. 15.
152. G. N. Banerji, *India*, p. 36.
153. *Ib*, p. 43.
154. *Kalidas Nag*, p. 23.
155. *Cf. Kalidas Nag*, p. 23.
156. G. N. Banerji : *India*, p. 26.

the importance of the South Indian coast as a centre of trade. Fa Hien mentions sailing in 413 A.D. for Canton in a merchant vessel with 200 Hindu traders on board. About 222 A.D. at the time of the *Wu*, a ship with seven sails could sail from Kango-tia-chou, a place on the west coast of India according to Dr. Bretschneider, and could enter Tat'sin (Syria) within a month, if the winds were favourable.[157]

We have already referred to the existence of evidence in Egypt, etc., indicating close contact between the West and India and to these may be added the following.

In the Nile valley, and at Babylon, native authors such as Manetho and Berossus wrote in Greek. The Roman Empire offered the Greek intellect a new home with fresh constitutional and legal principles and the West became a province of Hellenic manners and customs.[158]

In Auxum, the capital of Abyssinia, the great monolith, belonging to the first century A.D. is of Indian inspiration. While the idea is Egyptian, the details are said to be Indian.[159]

In the *Anthropological Magazine, Man*, for 1906, part VIII, the famous Egyptologist Flinders Petrie, refers to his discovery of portraits of Indian men and women at Memphis, as the first remains of the Indians known in the Mediterranean. The connecting links testifying to embassies from Egypt and Syria to India and to the missions of Asoka for the propagation of Buddhism as far west as Greece and Cyrene which were so far lacking appear to have started with the discovery of the Indian colony at Memphis. Further researches may shed great light on this connection.

A reference to Alexandria may be made in concluding this long account. It was here the Greek play is said to have been composed. Alexandria was essentially a Greek city, made up of about every nation under the sun. It carried on a large, profitable and increasing trade with the East. Its influence on the Roman Empire and European civilization was vast. Its schools of philosophy modified Christianity in the East. Its wealth and population excited the jealousy of Augustus. Hadrian was struck with the activity and the industry of the Alexandrine population.[160]

Alexandria was dealing with Indian wares. Dio Chrysostom, contemporary with Plutarch and a friend of Apollonius of Tyana, who lived in Trajan's time, mentions Indians among the cosmopolitan crowds to be found in the bazaars of Alexandria, having come by way of trade.[161] There is a suggestion that the Indians referred to may be the Ethiopean Indians, whose

157. G. N. Banerji: *India*, p. 43.
158. *Ib.*, p. 22.
159. Fergusson: *History of Architecture*, Vol. I, pp. 142—3.
160. *Finlay*, p. 85.
161. *Apollonius of Tyana*, pp. 62—3.

city was Adule. But, it is said, Hindus also resorted to this centre of the world's trade.[162]

There was a statue of the River God Indus in the town, probably the gift of a Greek. Constantinople also seems to have reported the presence of Brahmans.[163]

During the reigns of Severus, his son Caracalla, and the pseudo-Antonines, Alexandria and Palmyra were most prosperous and Roman intercourse with India was at its height. Then Roman literature gave more of its attention to Indian matters, and did not, as formerly, confine itself to quotations from the historians of Alexander or the narratives of the Seleucidian ambassadors but drew its information from other and independent sources. In the life of Isiodorus by Damascius as presented by Photius is to be found an account of some Brahmans who visited Alexandria and lodged in the house of Severus, *i.e.*, before he became consul (A.D. 470 ?) and took up his residence at Rome.

Thus, under the Romans, Alexandria was the centre of the world's trade; its port was the mistress of the trade which passed between India and Europe. The Syrian vessels touched there *en route* to Italy. The harbour was always busy and full and in the streets might be seen men of all languages and dresses.

Recapitulating what has been elaborately set out before, it will be found that a few solid facts emerge from the preceding considerations.

1. The existence of trade between South-West India and Egypt.

2. Colonies and settlements for purposes of trade of the Greeks and Romans in South-West India and of Indians in Egypt.

3. Some familiarity with the Greek tongue by trading Indians and of Indian languages of the South by the people of Alexandria interested in Eastern trade.

4. Intimate knowledge of Egypt and the Nile, etc., acquired by the Indians, whether it implies that the Indians came to India from thence or Indians colonized there later.

5. Reference to the Brahmans and Hindus in ancient Greek literature and the discovery of Roman coins in India excluding the possibility of identifying Indians with other than Hindus.

These facts are of paramount importance in coming to a decision regarding the language of the unknown passages in the Greek play under reference. It is unfortunate that no attempt has been made to explore the possibilities of these passages belonging to any language in Egypt and the surrounding

162. *Ib.*, p. 62.

163. Dr. G. Oppert in the *Madras Journal of Literature and Science*, 1879, Vol. XXIV, pp. 209—220.

countries. Whether the passages do not belong to the Etruscan language has also not been considered. Then, the island of Socotra is in the Indian Ocean and, not improbably, the people there may have been at that time generally known as Indians like the Ethiopians and others. Till the Mussalmans overran that country, it was only Greek that was spoken there and it was an important centre of the Eastern trade at the period of which we have been speaking. It is not unlikely that a large number of Socotrians also lived in Alexandria. It is impossible for us, here, to say whether the unknown passages do not belong to the language of Socotra or again whether these passages have not something to do with the listed words and passages of the language spoken by the people with whom Eudoxus of Cyzicus came into contact during his voyages. If we could exclude the possibility of the passages being thus identified with any other non-Indian language, then the question would again arise whether they may not have something to do with the Brahūi dialect of Gedrosia, which has marked affinities with the Dravidian languages of the South. If 'Pandion' be a mistake for Porus and the embassy went from the north-west India, then even the Greek language of the embassy's credentials could be explained. This avenue of research also deserves careful consideration. A north-western Indian relationship with the passages would also be consistent with the knowledge of the Hindus regarding East Africa and the large number of Sanscrit words to be found in the vocabulary of the Egyptian language. It may also be usefully considered whether the unknown passages may not belong to either later Pali or old Prakrit. The publishers of the *Oxyrhyncus Papyri* on p. 55, while commenting on l. 83 containing the words '*Panoumbretikateman*', etc., say: "Assuming that it is worth while to bring the barbarian language into relation with any known speech the key is possibly to be found in late Pali or old Prakrit. We owe to Dr. G. A. Grierson the suggestion that in the present passage, for instance, *Panoumbreti* may represent *Pano amrita* (drink and nectar) which suits the context remarkably well. Similarly, he would convert *alemmaka* in l. 205 with the Pali *alam*, (enough or stop), *ka* being a substantive suffix which an ignorant Greek might use incorrectly. But we must leave the consideration of this question to Sanscrit scholars." It may nevertheless be said that the vast intercourse between south-west India and Alexandria may be considered favourably to locate the scene of the play in a western port of Southern India. In this case, we cannot be unmindful of the second embassy to Rome in the first half century A.D. Plocamus learnt the language of the country Ceylon: it must have been Tamil. If, however, Pliny's *Taprobane* refers to Sumatra, a fresh difficulty arises.

Of course, if we could agree with Dr. R. Shama Sastri's identification of Malpinaik, an important link for his case will have been forged. This apart, Dr. Shama Sastri combines ransom and drink But as the distinguished savant

of the Mysore University (Sir Brajendranath Seal) has said, the two cannot be, and as the drinking scene undoubtedly is there, casting dice for ransom may be abandoned. The scene is also reconstructed in the Report by him with this modification. Following the syllabification (which Dr. Shama Sastri has made) of the transliteration of the unknown Greek passages one seems inclined to agree with the learned doctor that the passages may be of the Kannada language. But it is not altogether easy so to agree without a little straining of Kannada itself.

Dr. Seal does not appear[164] wholeheartedly to agree with this identification, judging from the words 'if this is Kannada speech, etc.' I have had the advantage of a long and useful discussion with him on this subject and he seems to consider that the language may be Dravidian while it would be rather difficult to contend that it is Kannada only, excluding the possibility of Tamil being the unknown language. I may observe that Dr. Shama Sastri is a Sanscrit scholar and that Dr. Seal is also a scholar in Pali and Prakrit in addition. In the second century A.D. Malayalam had not yet definitely formed, but Tamil was a well developed language. The difference between Kannada and Tamil in the derivation of words, etc., may not have been so much as now. The annexed table[165] indicates how, if the language can be said to be Kannada, it may be considered to be Tamil as well, though the rendering as we have it creates a predisposition in favour of Kannada.

If the farce was staged at Alexandria,[166] why should it contain non-Greek, particularly Kannada passages? Who could appreciate it there? Was the Kannada language likely to be understood by any important section of the people in that place? I can understand Tamil scenes in a Burmese play or a French scene in an English drama like *Henry V*.[167] Dr. Hultzsch was unable in 1904 to identify more than a few words and Dr. Grierson suggested Pali or Prakrit to have been the unknown language. Mr. R. A. Narasimhachar has not been able to give us the benefit of his experience. Rao Bahadur H. Krishna Sastri whose recent demise we all so much deplore was kind enough to spare to me long talks on this play; I trust I am not taking any advantage in stating that he felt it difficult to agree with the identifications of the learned doctor. Rao Bahadur M. Shama Rao, our President,

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164. See p. 19, *Mys. Arch. Rep.*, 1926. 165. See Appendix "C".

166. The Publishers suggest it may have been staged at Oxyrhyncus.

167. *Cf.* Shakespeare: *Henry V*, Act III, Sc. iv. Rouen—a room in the palace.

A dialogue in French between Katharine, the daughter of Charles and Isabel of France and a lady attending on the princess, called Alice, is given, about 60 lines in all. In the previous scene, the English Forces are below the gates of Harfleur in France and the Governor and citizens on the wall. King Henry enters with his train and the gates are opened to him. Note—French could be easily understood and the scene appreciated by Shakespeare's English audiences at the time.

has given me many and valuable hints and I am extremely grateful to him. I have had the benefit of interesting discussions with Messrs. B. M. Srikantia, D. V. Gundappa, B. Venkatanaranappa and others and I regret to say that my sanguine expectations were not realized.

'Chiefs of the Indians', in the text, may not refer to the tribal chieftains at all. None are referred to in the *dramatis personæ* or the play. Why does the Hindu king address his party as 'Indian Chiefs' or address them in Greek while starting them to dance, himself leading, while on every other occasion, he speaks in the unknown language?

Then, the form of the identification is again important. There is no trace of the existence of any Kannada literature prior to the seventh century A.D. The words as identified read like modern Kannada. The primitive Kannada of the Kadamba period is said to differ as much from the Kannada of the thirteenth century as the latter from the modern. Beowulf and a mid-English verse may each be compared with the poems of Tennyson or Kipling to give us some idea of the difference. Nor is there any indication of the spoken Kannada of the period.[168]

In a paper contributed to the Third Oriental Conference held in Madras on the 'Earliest Monuments of the Pandya Country and Their Inscriptions', Mr. K. V. Subrahmanya Iyer refers to the Brahmi cave inscriptions of South India and suggests the language of the inscriptions to be Tamil, from the orthographical and other peculiarities. They may be the same for the sister languages, Kannada and Telugu. In any case, they are peculiar to the Dravidian languages. It may possibly be that some Tamil scholar will give that attention to this subject as Dr. Shama Sastri has done for Kannada and guide the lay reader towards a correct solution. Dr. Shama Sastri is doubtless entitled to say that his identification is strengthened by Malpi and the Tamil mixed language of the Udipi people.

The conclusion becomes irresistible that judgment should be suspended, pending further elucidation of several facts referred to in this paper. The lovers of the Karnataka country and its language cannot be sufficiently grateful to Dr. R. Shama Sastri, for his laborious research and most praiseworthy endeavour to identify these unknown passages and I hope, with the march of time, his identification will be enabled, by further research, to become an accepted fact.[169]

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168. Some specimens of early Kannada from the inscriptions are given in Appendix "B".
169. The text of the passages is given in Appendix "A".

APPENDIX A.

Text of the Papyrus as given in the Text. (Oxyrhyncus Papyri III, No. 413.)

(*Col. iv of the Greek Text, ll. 188—230.*)

F. Lady Charition, rejoice with me at my escape !
A. (Charition). Great are the gods.
B. (buffoon). What gods, fool ? * * *
A. Cease, fellow !
F. Wait for me here and I will go and bring the ship to anchor.
A. Go ; for see, here come their women from the chase.
B. Oh ! What huge bows they have !
A woman. Kraunou. *Another.* Lalle.
Another. Laitalianta Lalle . . .
Another. Kouakos anab . iosara.
B. Hail !
All. Laspathia.
B. Ah ! Lady, help !
A. Alemaka. *All.* Alemaka.
B. By Athena, there is no . . . from us.
A. Wretch, they took you for an enemy and nearly shot you.
B. I am always in misfortune. Will you then . . . to the river Psolichus ?
A. As you like. (*Drums.*) **B.** * * *.
All. Minei.
F. Lady Charition, I see the wind is rising, so that we may cross the Indian ocean and escape. So enter and fetch your property, and if you can, carry off one of the offerings to the goddess.
A. Prudence, fellow ! Those in need of salvation must not accompany their petitions to the gods with sacrilege. For how will the gods listen to men who try to win mercy with wickedness ?
B. Don't you touch, I will fetch it.
F. Well, fetch your own things then.
A. I do not need them either, but only to see my father's face.
F. Enter then ; and do you serve them . . . and give them their wine strong, for here they come.

(*Col. ii of the Greek Text, ll. 38—106.*)

B. I think that they are the daughters of swine ; these too I will get rid of. (*Drums,* * * *.)
All. Ai arminthi. (*Drums.*)
B. They also have run away to the Psolichus.
C. Yes ; but let us get ready, if we are to escape.
B. Lady Charition, get ready if you can to take under your arm one of the offerings to the goddess.
A. Hush ! Those in need of salvation must not accompany their petitions to the gods with sacrilege. For how will they listen to the prayers of those who are about to gain mercy by wickedness ? The property of the goddess must remain sacred.
B. Don't you touch ; I will carry it.
A. Don't be silly, but if they come, serve them the wine neat.
B. But if they will not drink it so ?
C. Fool, in these regions wine is not for sale. Consequently, if they get hold of this kind of thing, they will drink it neat against their will (?).
B. I'll serve them lees and all.
C. Here they come, having bathed, with . . . (*Drums.*) . .

King. Brathis. *All*. Brathis. **B.** What do they say ?

C. Let us draw lots for the shares, he says. **B.** Yes, let us.

King. Stoukepairomellokoroke. **B.** Back, accursed wretch !

King. Brathie. (*Drums*). Bere konzei damun petrekio | paktei kortames bere ialero depomenzi | petrekio damut kinze paxei zebes lolo | bia bradis kottos. *All*. Kottos.

B. May you be kicked by ' kottos '. *King*. Zopit. (*Drums*.)

B. What do they say ? **C.** Give them a drink, quick.

B. Are you afraid to speak then ? Hail, thou whose days prosper ! (*Drums*.)

King. Zeisoukormosede. (*Drums*.) **B.** Ah ! Not, if I know it !

C. It is watery ; put in some wine. (*Much drumming*.)

G. Skalmakatabapteiragoumi.

H. Tougoummi nekelekethro. **G.** Eitoubelletrachoupteragoumi.

B. Ah ! None of your disgusting ways ! Stop ! (*Drums*.) Ah ! What are you doing ?

H. Trachountermana.

G. Boullitikaloumbaï platagoulda bi [

B. Apuleukasar. (*Drums*.) *King*. Chorbonorbothorba........toumionaxizdespit platagoulda bi........sesorachis. (*Drums*.) *King*........orado satur [

King. Ouamesaresumpsaradara ei ia da [

B. Martha marithouma edmaïmaï maïtho........thamouna martha marithouma. (*Drums*) ....tun [

King. Malpiniakouroukoukoubi karako....ra.

All. Aba. *King*. Zabede zabiligidoumba. *All*. Aba oun [

King. Panoumbretikatemanouambretououeni.

All. Panoumbretikatemanouambretououeni
Parakoumbretikatemanouambretououeni
Olusadizapardapiskoupiskateman areiman [
ridaou oupatei . a . (*Five drummings*.)

King. A boundless barbaric dance I lead, O goddess moon,
With wild measure and barbaric step ;
Ye Indian chiefs, bring the drum (?) of mystic sound,
The frenzied Seric step . . , (*much drumming, beating*.)

All. Orkis [.]. **B.** What do they say again ?

C. He says, dance. **B.** Just like living men. (*Drums* * * *)

C. Throw him down and bind him with the sacred girdles (*much drumming. Finale*.)

B. They are heavy now with drink.

C. Good ; Charition, come out here.

A. Come, brother, quickly ; is all ready ?

C. Yes, all : the boat is at anchor closely ; why do you linger ? Helmsman, I bid you bring the ship alongside here at once.

D. (*Captain*). Wait till I give him the word.

B. Are you talking again, you burgler ? Let us leave him outside to kiss the ship's bottom.

C. Are you all aboard ? *All*. Aboard ! **A.** O unhappy me ! A great trembling seizes my wretched body. Be propitious, lady goddess ! Save thy hand-maiden !

APPENDIX B.

Mysore, Vol. III, P. 1. *Ep. Car.*, p. 381. A.D. 189, Nanjangud 199.

ಗಟ್ಟವಾಡಿ ಗ್ರಾಮ.

ಸ್ವಸ್ತಿ ಶ್ರೀ ? ಸಕ ವರಿಷ
ನೂಜಪನ್ನೊನ್ದನೆಯ ೧೧೧
ಆಂಗ್ಗಿರ ಸಂವತ್ಸರ
ದ ಎಜಿತಿಹವೆಮ್ಮಡಿ
ಯಂ ರಾಜ್ಯದನ್ದು ಗೊ
ಟ್ಟಿವಡ್ಡಿಯ ಗೋವುಣ್ಡು
ಗಳಂ ಸೆಲಾಂಬ್ಯೆಯುರುಂ
ಆನೆಯುರುಕುಡಿ ಗೋವು
ಣ್ಡುಂ ಗೆಯುದ್ದುವದಕ್ಕೆ ಇವರ ಕೊ
ಡಗ್ಗೆ ಸೆಲಬ್ಬೆಯರ ಕೊಡಗ್ಗೆ
ಎಟಿಹಂಬಾಳಿಂ ಆನೆಯುರ ಕೆ.
ಡಗ್ಗೆಂ ಕೊಡೆಕೆ ಎಡನಟ್ಟಕ್ಲಂ ಕೊ
.ಸಿದಾಕೆಜಿ ತಗಡುರ ಕುರು
ಳ ಕೊಗೂಣ್ಣೆ ಎಡತಲೆಯು
ಕೊತದಪುಳ್ಳಿಗನುಂ
ಕೆಂಣ್ಣೆಲ್ಯೆಯು ಬದ್ರ
ಕ್ಕೆ ಐಯುನೂಂನಿಟ್ಟರೆ
ಯು ಬೋರೆ ಅಚ್ಚೆಗಣ್ಡನುಂನ
ಲ್ಲೆವರುಸಕ್ಷಿ ಉರಎ
ಬ್ಬೆದಿಂಬರುಸಕ್ಷಿ ತ
ಣಾಪತ್ತಿ ಬೆಯುಳ ಜೀಯು
ನುಂ ಊರಪುರವಂನು.
ಸಕ್ಷಿ ಕವುಜಸತಿ
ಗಂ ಬಡಗಿ ವುರಾಚರಿ ಜ
ಲನಾಗಂ ಕೆರೆಗಾಬಿಟಿಗನು
ವಿುಸಗರ ಬೀಮನುಂ ಹೊಲೆ
ಲಿಷವಂ ಇವರ ಸಕ್ಷಿ
ಯುಂಗ . ಭರಾ . . ತಪ್ಪೆ
. . ದೇವರ ಭಿದಿರಿನಿಯ . .
. . ಇದ್ದುರ್ ಕೆಡ . . .
rest damaged

Ep. Car., *Mysore*, Vol. III, P. 1, at pp. 353-54, ll. 12 ff.

Nanjangud, 122. Harivarma A.D. 266.

ಹಳಗನ್ನಡಕ್ಷರ. 3 ಹಲಿಗೆ ಆನೆಮುದ್ರೆ.

. . . ಕೊಚ್ಚಟಿ ಕೊತ್ತಗಾವುಣ್ಡನ್ ತತ್ಪುತ್ರ ಕೋರಾತ್ಯಗಾವುಣ್ಡಂ ದುಷ್ಟಸ್ವವಾಹಕ ಮಜಿವೊಕ್ಕೆ ಕಾವಂತೆ ಬಣ್ಟರ ಭಾವ ಚೆಲಕುಜಿವ ಹೆಜ್ಜಜ ಸಮರವಲ್ಲೂ ರಾರಿ ಮಾರನಾಗಿ ಗುದುರೆಯು ಪಾಯಿಸಿ ತಾನ್ದೆ (ದಂಡು) ಯುನಿಜಿದು ರಾಣಿವಾಸ ಭಣ್ಡಾರವುಂ ಪೆಚಿದು ತೋರಪಳಯಿಗೆ ಭಾಗಿತ್ತಿ ತೊಜಿ ಬಡಗೆರೆ ನಾಡು ವಿಷಯ ಅಪ್ಪೊಗಾಲ್ನಾವು ಗ್ರಾಮು ಸರ್ವಬಾಧು ಪರಿಹಾರವೂಟ್ಕಜು ಗೊಟ್ಟಂ ತಸ್ಯ ಸೀಮೊನ್ತರೇ ಪೂರ್ವ ನೋಡಿ ಕೊಲತೂರ ದ್ವಿಸನ್ಧಿ ಕೊಲದ ಗುಣ್ಡಯೇ ತೆಂಕನೋಡಿ ಕಿಬಿರತಿಂಣೆ ಪೆಣ್ಣಿಗಗಾಲನಿ ಎರೆಕಟ್ಟೆ ಸಜ್ಜಾರಿ ಭೂವಿುನ್ದ ಪೇರೊಬ್ಬೆಯ ತುಟ್ಟೆಲೆ ಎರೆ ಪಡಿಯೆ ಗೊನತು ಭೂವಿುಲ್ಬುಣಸೆಯೆ ಬಬ್ಬಾಗಿಲ ಹುಸಗೂರ ದ್ವಿಸನ್ಧಿ ನಡಿಯೆ ಪಡುವ ನೋಡಿ ಮಣಲದಿಂಣೆ ಕಾರಳ್ಳುಣಿ ಸಯ್ಯೆ ಬಬ್ಬಾಗಿಲ ಕೊಟಳನಲ್ಲೂರ ದ್ವಿಸನ್ಧಿ ನಾಬಿವತ್ತ ಮನ್ದಾಣ್ಡಿ ಎರೆಪಡಿಯೆ ಗೊನವ್ರಿಯೊಬ್ಬೆನಟ್ಟ ಕಲ್ಲಿ ಸಜ್ಜೂರಿಯ ಬರತಿಯು ಕೆಳಗೆ ಕೊಣಲೆವಿಡಿದು ಪೇರೊವ್ವೆ ಬಡಗ ನೋಡಿದಟ್ಟ ಪುಣಿಸಯ್ಯೆ ಕೆಂಬರೆ ವತ್ತು ಮನ್ದಾಣ್ಡಿ ನರನೊಳ್ಬೆಯುಂ ಕೆಂಕೆಜಿಯು ಪೆರಿಯು ಪುಂಗಿಯು ಪೇರೊಬ್ಬೆಯ ಮುರಿದು ಕಿಡಿವಗುಣ್ಡಿಯ ಬಬ್ಬಾಗಿಲ ದ್ವಿಸನ್ಧಿಯು ಪುಣಜಪರಳಸ್ದಿಯ ನಾಡ ನೋಡಿಕೆ ಕೆಂಕೆರೆಯು ಕೊಳದುಬ್ಬಲೆ ಕೆಪಲ್ಬಡಿಯು ಮೂಡಣದಿ ಕೊಲದ ಗುಣ್ಡೆಯ ಕೂಡಿತ್ತು ಸೀಮೊನ್ತರಸ್ಯ ಸಾಕ್ಷಿಣಾಂ ಕೋತ್ತಮುಙ್ಗಲದ ನಂದಿಯುರು ಹಡದ . . . . ಪುಡೆಯುರು ಗಣಿಗನೂರಲಿನದ . . ಕರು ತಲಕಾಡಹನ್ನು . . ವರು ಮುದ್ದೂರ ಗಣೆಯುರುಂ ಸ್ವದತ್ತಂ ಪರದತ್ತಂ, etc.

Ep. Car., Vol. VII, p. 156. Shikarpur 52 (?) 357 A.D.

ಪೂರ್ವದ ಹಳಗನ್ನಡಕ್ಷರ ಆನೆಮುದ್ರೆ.

" . . . ಪದ್ಮಾವತೀದೇವಿಯುಳಬ್ಧ ವರಪ್ರಶಾಧತದಜ್ಞಾಗ್ಲಾತ್ತದ ಪರಮ ಥಜವನ ಪುರುಮುಥ್ಯೇ ಶಗ ವರ್ಷ ನಯುನಗಿರ್‍ರೇನಯೂ ಶಾಧಾರಣ ಶಮ್ವತ್ಸರೇ ಪಾಲ್ಗುಣಮಾ ಅಮವಾಶೇ ಆದಿವಾರದನ್ದು ಕಾರೆನಾಡ ದೇವನೂರನು ಳಗ್ಗೆಯುರ ಕುಳದಮುಥಿಗವುಡನ ಶುಪುತ್ರ ರಾಮುಥೇವನು ಹೆಜ್ಜಜಿನಿಜೀದು ರಾಜಮಲ್ಲನ ಹೆಣ್ಡತಿ ಭಣ್ಬರವನು ಬಲ್ವಳಾ ತಿನ್ದೊಪ್ಪಿತಿದಲ್ಲಿಗೆ ಮೆಚ್ಚುಗೊಟ್ಟ ಭೂಮಿ."

Ep. Car. Vol. IX, Bangalore, p. 459. Ganga, Kongani Maharaja Db. 67.

ಆನೆಮುದ್ರೆ.

3 ನೇ ಪತ್ರದ ಹಿಂಭಾಗ

'24 . . . ಪೆರ್ಗ್ಗಣ ನಿಪನ್ನಿಕ್ಕರ್ಣ್ಣ ಗವೆದೆ ನಮಿಕೊಂ ಒನ್ದುಪಾಯುಂ ಒನ್ದು ಅಭಿವುರ . .

Ep. Car., Vol. I, pp. 1—4. Coorg Inscriptions.

Copper-plate Inscription at Mercara. Date A.D. 466.

Purvada Hale-Kannada Characters. Seal: An elephant.

p. 3, l. 19—ಪಡಿಯೆ ಆಜ ಒಡನ್ ಊರ್ ಊರೊಳ್ ಪನ್ನಿರ್ಕ್ಕಣ್ಣ ಗನ್ ಗೆಯ್ದು ಅಪ್ಬಲಿಮಣ್ಣ ವರ್ ತಳವನಪುರದೊಳ್ ತಳವಿತ್ತಿಯುಮನ್ ಪೊಗರಿಗೆಟಿಯೊಲ್ ಪನ್ನಿರ್ ಕ್ಕಣ್ಣ ಗವರ್ ಪಿರಿಕೆಜಿಯೊಳವರ್ ರಾಜಮಾನವರ್ ಅನುಮೋದನ ಪನ್ನಿರ್ ಕ್ಕಣ್ಣ ಗವರ್ ಮನೋಹರವರ್ ದತ್ತವರ್ ಬದಣಿಗುಪ್ಪೆ ಗ್ರಾಮಸ್ಯ, etc.

Ep. Car., Kadur, Vol. V., p. 175. Ganga, C. 480; Nirvinita, C. M. 50;

ಪೂರ್ವದ ಹಳಗನ್ನಡಕ್ಷರ.

ಸ್ವಸ್ತಿ ಶ್ರೀ ನಿವ್ವನೀತರಾಕಜೀಯಾಮಗನ್ದಿರ್ಕದುವಟ್ಟಿಯುರಿನ್ದವರ್
ವಲ್ಲವರಸರಿನ್ದಜಿಕ್ಕೊಗೊಣ್ಡಪದಸೂವಿದೊ
ರಾ ಅನುಜೊ ಇನ್ದು ಕನಲ್ಗೊಳಿನನ್ದಿ ಯಾಲರಾವಿ
ಟ್ಟದು ಪಡೆವ್ಯೆಲಾಮುಅಮಸಪಾಲುವರ್
ಇದಾನಟಿದೊನ್ನಾಳನ ಪುದೊಸಞ್ಚ ಮಾಪಾತಗಮಕ್ಕುಂ
ಸ್ವಸ್ತಿ ತ್ರೀ ಅವ್ವೋರಮ್ಪದಿವಕ್ಕರ್ಪದಿಕರ್ಣ್ಣ ಗನಲ್ವತ್ಥವಿ
. . . . ದಮರಮಸುಕೆಯೆ.

ಇ ಉರಾಸುಕಂ ದೇವತು.

Ep. Car., Vol. XI, p. 20. No. 43 of Chitaldroog. (A stray verse). 5th cent.

ಬಿಣಮಣಿ ಅನ್ತು ಭೋಗಿ ಬಿಣದುಳ್ಮಣಿವಿಲ್ಮನದೋನ್
ರಣಮುಖದುಳ್ಳಕೋಲಂ ನೆರಿಯುಕ್ಕು ಮನಿನ್ದ್ಯ ಗುಣನ್
ಪ್ರಣಯಿಜನಕ್ಕೆ ತಾಮನಸಿತೋತ್ಪಲವರ್ಣ್ಣನವನ್
ಗುಣ ಮಧುರಾಂಕ್ಕ ದಿವ್ಯಪುರುಷನ್ಪುರುಷ ಪ್ರವರನ್ ||

Ind. Ant., Vol. X, p. 60. About 6th cent. A.D.

On the rock near the Vaishnava Cave III, Badami.

ಸ್ವಸ್ತಿ ಶ್ರೀಮತ್ ಪ್ರಿಥಿವೀವಲ್ಲಭ ಮಂಗಲೀಸನಾ
ಕಲ್ಮನೆಗೆ ಇತ್ತೊಡು ಲಂಜಗೇಸರಂ ದೇವರ್ಕೆ ಪೂನಿಱುವ
ಮಾಲಕಾರರ್ಗ್ಗೆ ಅರ್ದ್ಧ ಪೀಸದಿ ಇತ್ತುದಾ ಗಱಿವೋನ್
ಪಞ್ಚಮಹಾಪಾತಕನಕ್ಕುಂ ಏೞನೆಯಾ ನರಕದಾಪುೞು ಅಕ್ಕುಮ್.

Ep. Car., Vol. X, pp. 2-3. Kolar No. 6, 735 A.D.

ಸ್ವಸ್ತಿ ಶ್ರೀ ಕೊಂಗಣಿ ಮಹಾರಾಜಶ್ರೀ ಪುರುಷ ಪೃಥುವೀ ರಾಜ್ಯ ವಿಜಯ
ವತ್ಸರ ಇರ್ಪ್ಪದಾ ಏಣ್ಟನೆ ಯೊಳು ಶಿವಮಾರ| ಕದಮ್ಬೂರಂ ಆಳೆ
ಕದಮ್ಬುಬ್ಬರ್ದರಮ್ಮಳಾಯೋನ್ಕಱುಕಣ್ಟೇಶ್ವರಕು ಪೊಯ್ತು
ಮಲುತ್ತ ಕೞನಿ ಕಣ್ಡುಗಂ ಎಲೂತ್ದ್ಘ ಪಾೞು ಆಯ್ತು ಮಾಸೇ
ಮೊನ್ನಿತ್ತಿಳಿ ಅಱರನ್ತ ವೊಕಣ್ಟೇಶ್ವರುಂ ಆಳ್ವ ಅರಸನು ಮಾ
ಡಿಸುವೊರ್ ಪಾಲಿಸುವೊರ್ ಪೊನ್ನಿಲನುನ್ನಿ ಸಿಱುಸುಳ್ಳರೆ ಕಾನಿ
ಪೊದು ಅನ್ತು ಮಾಡಿಯ ಪೋಲಿಯೆ ಕೊಣ್ಡು ದಳಿವೃತು ಕುವೊಂ
ದು ತಳಿಕ್ಕರಿಕ ಪೊರೊಟ್ಟು ಮಾನುವೊನ್ಬು ಮುಂದಲ್ತ್ರಕ್ಕರ್ಣ್ಡುಗ
ಭಕ್ತ ಪೋಲಿಯೆ ಕೊಣ್ಡುಟ್ಟು ವೋನ್
ಈ ಧರ್ಮ್ಮ ಮಾನ್ನಿ ರಕ್ಷಿಚ್ಛದೋನ್ನಡಿ ಎನ್ತಲೆ ಮೇಲೊ
ಈ ಧರ್ಮ್ಮ ಮಾನ್ನಱಿವೋನ್ಪಞ್ಚ ಮಹಾಪಾತಕನಕ್ಕು
ಅರ್ಧಕ್ಕಣ್ಡುಗ ಆಯ್ತುಪುದ ಪೊಯ್ತೋಡು.

Note.—Mr. T. T. Sharman of the Visvakarnataka office kindly referred me to a few of these inscriptions.

APPEN

(**For numbers see** *Mysore*

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
2. Kraunou	Karevano ? ಕರೆವನೋ ?	Does he call ?
3. Lalle	Lalle ಲಲ್ಲೆ	(He is) coaxing
4. Laitalianta Lalle	Le ennuta le ennuta lalle ಲೆ ಎನ್ನುತ ಲೆ ಎನ್ನುತ ಲಲ್ಲೆ	He is coaxing by saying 'le'
5. Kotakos anab. iosara	Koḍagûsina bayvasara ಕೊಡಗೂಸಿನ ಬಯ್ವಸರ	An insulting word of the buffoon to the maiden, *i.e.*, the Greek lady
6. Laspathia	Lêsu baḍia, ಲೇಸು, ಬಡಿಯು	Well, beat him
7-8. Alemaka	Allemmakka, ಅಲ್ಲೆಮ್ಮಕ್ಕ	Not, my sister
9. Psolichus	—	—
10. Minei	Mîna ? ಮೀನಾ ?	For bath
11. Ai arminthi	Ai âr mindai, ಐ, ಆರ್ ಮಿಂದ್ದೈ?	Who has bathed ?
12. Brathis	Bêre âthisu=bêre âḍisu, ಬೇರೆ ಆಡಿಸು	Cause them to play at dice, each separately.
13. Stoukepairomel-lokoroke	Toyige pâyiro melloga-rakke, ತೊಯಿಂಗೆ ಪಾಯಿರೊ ಮೊಲ್ಲೋಗರಕ್ಕೆ	For the boiled pulses, rush and for the purpose of getting the sauce

DIX C.

Archæological Report for 1926.)

Glossary of Words	Tamil Equivalents
root *kare*=to call: 3rd person, singular, future tense.	Karevano? (கரைவனோ in Kodun-Tamil) Does he call?
cp. *lallevâtu*.	Le. (லே) He is coaxing.
'*le*'—particle used in addressing females. '*ennuta*'—imp. part. of root '*en*'=to say.	Le le enṛu (லே லே என்று) He is coaxing by saying (Le, le).
'*Koḍagûsu*=a virgin. '*bayva*'=present part. of root '*bay*' =insult. *Sara*=*svara*=voice.	—
'*lêsu*'=well. '*badiya*'—imperative singular of root *baḍi*=to beat.	......Adi (அடி)...... Beat.
'*alla*'—emma+akka.	Alla-em-akka (அல்ல நமது அக்கா) Not (my or our) sister.
—	—
mîṇa ay. *mîṇa*=noun form of root *mí*, to bathe. *ay* is an expletive.	.........May it not be a shortened and corrupt form of meenakshi; if so, it does not fit in with the context.
âr=who, *minday*—2nd pers. sing. indicative form of past tense of root *mî*=to bathe.	Ai Âr......(ஆர் or யார்?)......... Who? If Ai, yār munthai, it means, look here, who will be the first.
bére—separately. *âḍu*—2nd pers. imperative sing. of root *âḍu*=play: *âḍisu*=2nd pers. imperative singular causal form of the root *âḍu*.	Vêre attuvi (வேறே ஆட்டுவி) Cause them to play each separately; *cf.* Vrathis, *i.e.*, those who are under a vow.
18th Gk. letter Sigma is usually prefixed to words beginning with a consonant, *toyige*=boiled pulse. *pâyiro*—2nd pers. imper. pl. form of root *pây*=to rush. *Mellôgarake* =for the sauce (dative singular).	Thovaikku pāi ...... (தொவைக்குப் பாய்......) For the boiled pulses rush; *cf.* Thūkki, payara, meḷḷa, korokko.

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
15. Brathie	Bere, athi=bêre âḍi, ಬೇರೆ ಆಡಿ	Play separately
16. Bere konzei damun petrekio	Bêre koṇḍu hoida mun bêtirêkeyo ? ಬೇರೆ ಕೊಂಡು ಹೊಯ್ದ ಮುನ್ ಬೇತರೆ ಏಕೆಯೋ ?	Why do you cringe before it is separately poured to you ?
17. Paktei kortames bere ialer o de pomenzi petrekio	Pagaḍeya kôrutam îsu bêre ellarâḍe ponneṇisi bêtirêkeyo ? ಪಗಡೆಯ ಕೋರುಟಮ್ ಈಸು ಬೇರೆ ಎಲ್ಲರಡೆ ಪೊನ್ನೆಣಿಸಿ ಬೇತರೆ ಏಕೆಯೋ ?	Though you have been hoping this much through casting the die each after counting the gold at stake, why do you still cringe ?
18. Damut kinze paxei zebes lolo bia bradis kottos	Tamutake eṇisi pagaḍeya îse besadolavia bêre âḍisu kottu ôsu ತಮುಟಕೆ ಎಣಿಸಿ ಪಗಡೆಯ ಈಸೆ ಬೆಸದೊಲವಿಯ ಬೇರೆ ಆಡಿಸು ಕೊಟ್ಟು ಓಸು	Cause each of them to play, each having counted his own (share) and each casting the die loved for odd (number) and chop off the whole (of sauce).
19. Zopit	Hô bittu ಹೋ ಬಿಟ್ಟು	Oh, it fell.
20. Zeisoukor mosede	Hoyisikoḷ môsade ಹೊಯಿಸಿ ಕೊಳ್ ಮೋಸದೆ	Have it poured into your vessel by cheating.

Glossary of Words	Tamil Equivalents
—	Vêre âḍu(ngal).........(வேறே ஆடு (ங்கள்). Play separately.
konḍu—past part. of the root *koḷ*= to take. *Hoyyada*—negative part. of root *hoy*=to pour out, *mun*= before.	Vêre kondu peivadarku mun edarku vêttir. (வேறே கொண்டு பெய்வதற்கு முன் எதற்கு கெஞ்சுகிறீர்) Why do you cringe before it is separately poured to you? *cf.* Vêṛe Konjam or Kanji. See Dr. Hultzsch's rendering in *J. R. A. S.*, 1904.
pagadeya=accusative singular of *pagade*=dice, *kôrutam*=present part. of root *kôru*—to desire, hope. *Îsu*=this much. *ellar*=all persons. *âḍe*=having played. *pon* =gold. *eṇisi*=having counted, from root *eṇisu*=to count, *bêtir*—past pl. of *bê*=to beg. *êke*=why.	Pagadeya korium......vêre ellâr adavum pon enni edarku vêttir. (பகடையைக் கோரியும்......வேறே எல்லா (ரும்) ஆடவும் பொன்எண்ணி எதற்கு கெஞ்சுகிறீர்) Though you have been hoping......through casting the die each after counting the gold at stake, why do you still cringe; *cf.* pakkathu kotram vêre ayatar oḍê pomenru petrukio. "Would you send neighbourly friends away and take the things yourself?"
Greeks felt it difficult to pronounce Kannada words. See *Sabdamanidarpana*, Sutras 148 and 209. *îsa*=*îsu*+*e*. *besada*=of the odd number, *olaviya*—accusative singular of *olavi*=love, from root *ol*=to love. *Kottu*=chop off, *ôsu* =all.	Thangaladai enni pagadeyei...... vêre ātti kottu (or kuttu)...... தங்களதை எண்ணி பகடையை...... வேறே ஆட்டு (வித்து) கொத்து (or குத்து).
For *hô biḷdattu*. *ho*—an interjection, *biḷ dattu*—past, singular of root *bîḷ*.	Hō! Vîlndadhu or (Vizshndadhu) (ஓ! வீழ்ந்தது).
hoyisikoḷ=get poured. *môsade*=by deceit.	Peidukol mōsathinâl (பெய்து கொள் மோசத்தினால்).

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
21. Skalmakata	Kaḷ maka tâ, bâ ಕಳ್ ಮಕ ತಾ, ಬಾ	O son, come and give the wine.
22. Bapteiragoumi	Opputerake avam î ಒಪ್ಪು ತೆರಕೆ ಅವಮ್ ಈ	For the ransom agreed upon, give them (wine).
23. Tougoummi	Toyige avam î ತೊಯಿಂಗೆ ಅವಮ್ ಈ	Give them (wine) along with the boiled pulse.
24. Nekelekethro	nî kêḷêke ettiro ನೀ ಕೇಳೆಕೆ ಎತ್ತಿರೊ	You ask them why. Raise up, your cups.
25. Eitou belle trachoupteragoumi	Âyito belle trâska opputerake avam î ಆಯಿತೊ? ಬೆಳ್ಳೆ ದ್ರಾಕ್ಷ ಒಪ್ಪು ತೆರಕೆ ಅವಮ್ ಈ.	Is it over? then the white wine; give them (wine) for the ransom agreed upon.
26. Trachountermana	Trâskavun teramâna ದ್ರಾಕ್ಷವಂ ತೆರಮಾನ	Wine is the ransom.
27. Boullitikaloumbai	Bâ oḷitu îkaḷ umbai ಬಾ ಒಳಿದು ಈಕಳ್ ಉಮ್ಬೈ	Come, you drink this good wine.

Glossary of Words	Tamil Equivalents
kaḷ=accusative singular, *maga*=son, vocative case, *ta, ba*—second pers. imperative singulars of roots *tar*=to bring, *bar*=to come.	Kal-maka-tā-vā. (கள் மக தா வா) O son, come and give the wine; *cf.* Kal makkal tha=give the drink to the children. Quære: Is *Kal* the stone?
opputerake is the compound form of *oppida terake* from root *oppu*=to agree; *avam*=them; *î*=second pers. imperative singular of *î*=to give.	Oppu thirai avarkku î (ஒப்பு திறை அவர்களுக்கு ஈ) For the ransom agreed upon give them (wine); *cf.* Appam tarugumê=We will give the cakes.
toyge—dative singular of *toy*=boiled pulses.	Thovaiku avai î (தொவைக்கு அவை ஈ) Give them (wine) along with the boiled pulse.
nînkêl êke ettirô. nîn=you, *kêl*—second person imperative singular of root *kêl*=to ask, *êke*=why, *ettirô*=raise up, second person plural imperative of root *ettu*=to raise.	Nî-kêl-edarku......ettir. (நீ கேள் எதற்கு.........எடுங்கள்) You ask them why. Raise up (your cups); *cf.* Nee keelê ulkhaṇdhiru=You may be seated.
âyito=is it over, *beḷdrâksha*=white wine.	Ayito, vellai or (vellē) thrashi...... oppu thirai avaigalukku î. (ஆயித்தோ, வெள்ளை திராட்சை; ஒப்பு திறை அவைகளுக்கு ஈ) Is it over? Then the white wine; give them wine for the ransom agreed upon; *cf.* Yedo vallê rakshithu tharugumê=Here, now, I am able to give you protection.
drâkshavum teramâna. drâkshavum=wine also; *teramâna*=payment or ransom, from root *teru*=to pay.	Thrāshaiyum.........thirai mānam (திராட்சையும், திறைமானம்) Wine is the ransom. *cf.* Rakshithu, tharuvanō=Will he protect us?
bâ=come. *olitu*=well (adverb). *îkaḷ*=this wine, *umbai*—you will drink from the root *uṇ*=to eat.	Vâ-ollidu-î-kal-unbai (வா ஒளிந்து ஈ கள் உண்பை (பாய்) Come, you drink this good wine; *cf.* Olinthi koḷḷum payya=Son (child), hide yourself.

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
28. Platagoulda bi...	Pâl (=bâl) taguḷdapai ಬಾಳ್ ತಗುಳ್ದಪೈ	You get life.
29. Apuleukasar	Â puḷi kasar ಆ ಪುಳಿ ಕಸರ್	This is the sour sediment of the wine.
30. Chorbonorbo-thorba	Kôruvon orvan dorevon ಕೋರುವನ್ ಒರ್ವನ್ ದೊರೆವನ್	One who desires will appear.
31. Toumion axiz	Tâvamîvon ತಾವಮ್ ಈವನ್	He will give you a place.
32. Despit platago-ulda bi...	Axih dêśa biṭṭu bâḷ taguḷ-dapai ಆಕ್ಸಿ ದೇಶ ಬಿಟ್ಟು ಬಾಳ್ ತಗುಳ್ದಪೈ	Having left the country of Axih (Oxyrhyncus) you will get life.
33. Seo sarachis	Śiva sarakisu ಶಿವ ಸರಕಿಸು	O Siva ! bestow care on us.
34. Oradosatur	Oldu ose tôr ಒಲ್ದು ಒಸೆ ತೋರ್	Kindly show love to us.
35. Ouamesare	Oumesare ಓಮೇಸರೆ	Obscure. Is it Somesvara near Malpi ?

Glossary of Words	Tamil Equivalents
Mr. B. L. Rice suggests 'to clap hands'. *bâḷ*=life, accusative singular; *taguḷdapai*=2nd pers. sing. present of root *taguḷ*=to be in contact with.	Vâlvu (Vazhvu) thakkikol. (வாழ்வு தாக்கிக்கொள்) You get life; *cf.* Peḷai thu koḷḷu vai=You will survive.
â=particle indicating wonder, *puḷi* =sour, *kasar*=sediment.	Â puli kasar (kasadu, kayar or kasandu) ஆ புளி கசர் (கயர்) This is the sour sediment of the wine; *cf.* That sour sauce.
orvan=one (masculine sing.); *dorevon*=will be forthcoming, from root *dore*=to obtain.	Kôruvân oruvan thônṛuvan (கோருவான் ஒருவன் தோன்றுவன்) One who desires will appear; *cf.* Sōru mun othâr bâ=Before we are tired, let our people come.
tâvam=a place, accusative sing. *îvon*—will give, 3rd pers. fut. sing. of *î*=to give.	Thâvu-avan-î-van (தளக்கு அவன் ஈவன்) He will give you a place.
dêśavam+*bittu*=having left the country.	Axih dēsam viṭṭu vālvu adaivai. (Axih தேசம்விட்டுவாழ்வு அடைவை) Having left the country of Axih you will get life; *cf.* Dêsam vittu pilaithu koḻḻu vai=Leave the country and save your life.
sarakisu=take care of, second pers. imperative sing. of verb *sarakisu* formed from the noun *saraku* =care. cp. *Sarakugoḷ*.	Siva, sâru (சிவா சாரு) O Siva! bestow care on us.
oldu=having loved. *ose*—*tôr*=show love.	Oliḍu-asayei-thoṛṛu. (ஒலிது ஆசையைத் தோற்று). Kindly show love to us; *cf.* Vovvôr dêsattār=people of different countries.
—	* Ôm-Īsarē. (ஓம் ஈசரே). O God! *cf.* Ov vumō nêsarê=Is this good, friends?

* Here it strikes me, that, "Oumesare" need not be obscure nor need it be attributed to a village called Someswara near Malpi. We can safely say that it means O God! The king first prays to God Siva to bestow care on him, secondly, to show love to him and lastly, he addresses him as Om Īsarê (ஓம் ஈசரே) Oh God! etc. So this (35) Oumesare which is mentioned as obscure may be taken to mean Om Īsarê (*i.e.*) O God! etc.

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
36. Sumpsaradara ei ia da...	Sumpsarada âra aida ಸಂಸಾರದ ಆರ ಐದ	Go to the river of the place called Sumpsara or Umpsara. Psolichus is short for Sumpsaradâru.
37. Martha maritho-uma edmaimai maitho thamou-na martha mari-thouma	Mardam aridevu ; mâyada maime ; mâyada adan uṇṇa ; mardam aride-vamma [according to Mr. Bhaskarananda Saltore]	Obscure. Dr. Shama Sastri doubts the inter-pretation. We learnt a medicine ; this is the power of Māya ; eat this of Mâya ; we learnt medicine.
38. ......tun	—	An invitation of the sound of drums.
39. Malpiniak our-oukoukoubi karako...ra	Malpinâik avara avvage karadukoḷ ಮಲ್ಪಿನಾಯ್ಕ್ ಅವರ ಅವ್ವಗೆ ಕರದುಕೊಳ್	O Malpinaik,—the rest is obscure.
40. Aba	Aba-abba	A word of exclamation.
41. *Z*abede	Habbeḍe—Habbada eḍe ಹಬ್ಬದ ಎಡೆ	The dish of a feast.
42. *Za* biligidoumba	Habeḍege idan uṇbâ ಹಬೆಡೆಗೆ ಇದನ್ ಉಣ್ಬಾ	Come, eat this for a dish of a feast.
43. Pan oum breti-kateman ouam bre thououeni	Pânavan bêre ettikkade mânavan bêre ettau avve nî ಪಾನವನ್ ಬೇರೆ ಇಟ್ಟಿಕ್ಕಡೆ ಮಾನವನ್ ಬೇರೆ ಇಟ್ಟು ಅವ್ವೆ ನೀ	Without the distribution of drink to us separately, you divide shares of ransom (mâna), O ma-dam.

Glossary of Words	Tamil Equivalents
âra=river, accusative sing. from the noun *âru*=river (Tamil *âru*=river) *eyda*=go to, 2nd pers. sing. imperative form of root *eydu*=to go to, to attain.	......Âru aidu. (ஆறு எய்து) Go to the river...*cf.* Sambhu saradara ē yā do=Would not Siva give us arrows to fight ?
—	.........*cf.* Marithu marithôme edam amaikm=If we should hide again, securing a good place.
—	.........*cf.* Thavamêna marithu marithome=by our *thapas*, if we can hide again.
avara=their, *avvege*=to mother, *karedukol*=catch hold of, 2nd pers. sing. imperative form of the root *kare*=to call.	Malpi Naik avar avvayei karaindukol (மால்பி நாயக் அவர் அவ்வையைக் கரைந்துக்கொள்). This may be explained as follows :—The king may probably have asked the chief of Malpi who was with him, to send for the *Greek Lady Charition* (*i.e.*) *Avar avvai*. (அவர் அவ்வை).
—	Abba-abba (அப்பப்பா).
habbada=of a feast. *ede*=a dish.	Paruvathin edē (பருவத்தின் எடை); *cf.* The feast of a person in the prime of life.
—	......Idan-un (இதனை உண்) Eat this.
pânavam=drink, acc. sing.; *bêre*=separately; *ettikkade*=not having distributed (*ettu*+*ikku*): *mânavam*=ransom, acc. sing.; *bêrettu*=set apart, second pers. sing. imperative of root (*bêre*+*ittu*); *avve*—vocative case; *ní*=you.	Pânathai vērē eduthuvaikkāmal mânathai vērē avvai ní edukkirâi. (பானத்தை வேறே எடுத்து வைக்காமல் மானத்தை அவ்வை நீ வேறே எடுக்கிறாய்). The meaning is strained.

Original Passages	A Tentative Rendering in Kannada	Probable Interpretation
44. Panoumbreti-kate manouam bretou oueni	—	See 43. *cf.* Dr. Hultzsch, *J.R.A.S.*, 1904. Why not—give the nectar to drink it.
Parakoum bretika te ma noum bret ouou eni	Parakeyam bêre ettikkade mânavam bêrettau avve nî	Without setting aside our blessings you divide shares of ransom, O madam; *cf.* Kindly see nectar is given to drink.
45. Olusadizaparda piskou piskate man	Olisade irpara tappisikoḷ oppisikutte emman ಒಲಿಸದೆ ಇರ್ಪರ ತಪ್ಪಿಸಿಕೊಳ್ ಒಪ್ಪಿಸಿಕೊಟ್ಟೆ ಎಮ್ಮನ್	Unable as we are to win your regard, you may go away with our free consent.
46. Arei man ridaou	Âr emmannar ಆರ್ ಎಮ್ಮನ್ನರ್	Who are there like ourselves?
47. Oupatei...a	Idu oppite ಇದು ಒಪ್ಪಿತೆ	Is this to your satisfaction?
48. Orkis	Oragisu ಒರಗಿಸು	Support him (the king).

NOTE.—The rendering in Kannada, probable interpretation and the glossary of words are according to Dr. Shama Sastri (*cf.* Mysore Archæological Report for 1926). I am obliged to a few friends for the Tamil Equivalents.

Glossary of Words	Tamil Equivalents
—	—
parakeyam—singular of *parake*.	Parasu..... (பரசு)......Blessings.
olisade=without loving, neg. part. *tappisikoḷ*=escape; *oppisi*=having persuaded; *emman*=us; *ár*=who.	Oliyâdiruppavar—thappithukol—oppi-vittu engalai. (ஒலியாதிருப்பவர் தப்பித்துக்கொள் ஒப்பி விட்டு எங்களை).
—	Âr-em-annar or Âr-emmannār (ஆர் எம் அன்னார் or எம்மன்னார்). Who are these like ourselves?
—	Idu oppiṟṟō? (இது ஒப்பிற்றோ?) Is this to your satisfaction?
oragisu=second pers. sing.	Urangavai (உறங்கவை). Allow him to take rest by making him sleep.

NOTES.

Orientation.

BY K. RAMAVARMA RAJA, ESQ., B.A.

SINCE writing my previous note published in the *Quarterly Journal of the Mythic Society* (July 1927, pp. 65 and 66), more instances have been met with and collected, of the uses of the Sanskrit words for the four sides of the eastward-looking man and the corresponding four quarters of the earth which would further strengthen the position taken by me there, *viz.*, that such a man was the standard for fixing the four cardinal points with reference to his four sides. The context in which these words occur is the famous parable of *Puranjana* in the *Bhagavata Purana* (*Adhyayas* 25—29 in *Skandha* IV) wherein the soul occupying its earthly tenement is metaphorically depicted as a king residing in his court and the same words when used to describe the human body denote its four sides—front, right, back and left—but when employed in the description of the royal residence, signify the corresponding four quarters—east, south, west and north—respectively. The metaphorical or allegorical passage and its explanatory text that follows bring out more clearly the relationship between the two sets of words upon which my view was based. I shall next quote the two texts and try to enlighten them with my brief comments :—

सप्ता परिकृता द्वारः पुरस्तस्यास्तु द्वे अधः ।
पृथग्विषय गत्यर्थं तस्यां यःकश्चनेश्वरः ॥४५॥
पंचद्वारस्तु पौरस्त्या दक्षिणैका तथोत्तरा ।
पश्चिमे द्रे अमूषांतं नामानि नृपवर्णये ॥४६॥
खद्योताविर्मुखी च प्राग्द्वारावेकत्रनिर्मिते ।
विश्राजितं जनपदं याति ताभ्यां द्युमत्सखः ॥४७॥
नलिनी नालिनी च प्राग्द्वारावेकत्रनिर्मिते ।
अवधूत सखस्ताभ्यां विषयं याति सौरभम् ॥४८॥
मुख्यानाम पुरस्ताद्द्वा स्तयापण बहूदनौ ।
विषयौ याति पुरराड्रसज्ञविपणान्वितः ॥४९॥
पितृहूर्नाम पुर्याद्वा दक्षिणेन पुरंजनः ।
राष्ट्रं दक्षिण पांचालं याति श्रुतिधरान्वितः ॥५०॥
देवहूर्नाम पुर्याद्वा उत्तरेण पुरंजनः ।
राष्ट्रमुत्तरपांचालं याति श्रुतिधरान्वितः ॥५१॥
आसुरी नाम पश्चाद्द्वा स्तया याति पुरंजनः ।
ग्रामकंनाम विषयं दुर्मदेन समन्वितः ॥५२॥
निर्ऋतिर्नाम पश्चाद्द्वा स्तया याति पुरंजनः ।
वैशसंनाम विषयं लुब्धकेन समन्वितः ॥५३॥

* * * *

[*Bhag. Purana*—IV—25—(45—53)]

The residence has seven openings above and two below and is ruled by some one unknown. Of these five open to the east, one to the south, one to the north, and the remaining two to the west (posterior or back side). They are then described in detail to indicate their identity with the two eyes, two noses and one mouth (all these five in the front side), right ear (south); left ear (north); the genital opening and the anus on the posterior or back side. This metaphorical or allegorical passage is later interpreted in the text itself which explicitly applies the previous mystic descriptive statement, word for word, to the human body and identifies the nine openings with the five senses and the genital and fæcal apertures amounting in all to nine openings—two eyes, two noses, one mouth (front), right ear (south), left ear (north), and genital aperture and anus (west posterior or back side).

The explanatory text reads thus :—

पंचालाः पंचविषया यन्मध्ये नवखं पुरम् ॥७॥
अक्षिणी नासिके कर्णौ मुखं शिश्नगुदाविति ।
द्वे द्वे द्वारौ बहिर्याति यस्तदिंद्रियसंयुतः ॥८॥
अक्षिणी नासिके आस्यमिति पंच पुरःकृताः ।
दक्षिणा दक्षिणः कर्णः उत्तराचोत्तरः स्मृतः ॥९॥
पश्चिमे इत्यधो द्वारौ गुदं शिश्नमिहोच्यते ।
खद्योता विर्मुखीचात्र नेत्रे एकत्र निर्मिते ।
रूपं विभ्राजितं ताभ्यां विचष्टं चक्षुषेश्वरः ॥१०॥
नलिनी नालिनी नासे गंधस्सौरभ उच्यते ।
घ्राणोऽवधूतो मुख्यास्यं विपणोवाग्रसविद्रसः ॥११॥
आपणो व्यवहारोऽत्र चित्रमंधो बहूदनम् ।
पितृहूर्दक्षिणः कर्ण उत्तरो देवहूस्मृतः ॥१२॥
प्रवृत्तंच निवृत्तंच शास्त्रपंचाल संज्ञितम् ।
पितृयानं देवयानं श्रोत्राच्छ्रुतिधरा द्व्रजेत् ॥१३॥
आसुरी मेंद्रमर्वाग्द्वा र्व्यवायोग्रामिणां रतिः ।
उपस्थो दुर्मदः प्रोक्तो निरृतिर्गुद उच्यते ॥१४॥
वैशसं नरकं पायुर्लुब्धकोंधौ तु मे श्रृणु ॥

*　　*　　*　　*

[*Bhag. P.*—IV—29—(7—15)]

Here are two sets of words :— (1) पुरः, प्राक्, पुरस्तात्, (2) दक्षिण, दक्षिणेन, (3) पश्चात्, पश्चिम, and (4) उत्तर, उत्तरेण ;—which are used in the sense of the four sides of the eastward-looking person—front, right, back and left—as well as to denote the corresponding four quarters—east, south, west and north—respectively. And this is a more telling and impressive argument in support of the theory of their twinship or common origin as already suggested.

Buhler's Error in the Interpretation of the Date of Candupandita.

BY P. K. GODE, ESQ., M.A.

I POINTED out in the January issue of this Journal (p. 224) that the date of Cāṇḍūpaṇḍita, the author of the *Naiṣadhīyadīpikā*, the oldest known commentary on Śriharṣa's epic, was given by Aufrecht in his Catalogue as A.D. 1456. It was further pointed out that this date conflicts with the date of a MS. of the work (No. 415 of 1887–91 from the Government MSS. library at the Bhandarkar Institute) *viz.*, *Saṁvat 1442* (=A.D. 1386).

Since writing the above note I have been able to ascertain that Aufrecht has taken his date (A.D. 1456) from Dr. Bühler* whose remarks about the date of Cāṇḍūpaṇḍita are : "Cāṇḍūpaṇḍita gives as the date of his own work the fifteenth day of Śuklapakṣa Bhādrapada of the year 1513 according to Vikrama's Era, or A.D. 1456-7 A.D." These remarks obviously refer to the following verse 5 at the close of the MS. (No. 16 of 1874-75) :—

"श्री विक्रमार्कसमयात् शरदामथत्रिः पंचाशता समधिकेषु शतेष्वितेषु ।
तेषु त्रयोदशसु भाद्रपदे च शुक्लपक्षे त्रयोदशतिथौ रविवासरे च ॥
.................................इयं टीका । निष्पन्ना.............etc."

It will be clear from a perusal of the verse that the date ought to be Vikrama *Saṁvat 1353* as the verse states that thirteen centuries and fifty-three years (शरदां त्रिःपंचाशत्) had elapsed at the time when the work was completed.

Bühler's date *Saṁvat 1513* is obviously wrong. So also his fifteenth day of Bhādrapada, as we have in the verse the thirteenth day (त्रयोदश तिथौ).

The age of the MS. (No. 16 of 1874-75) is given at two places *Saṁvat 1473* (at the end of canto XXII) and *Saṁvat 1476* (at the end of canto II). If *Saṁvat 1513* is regarded as the date of composition of the work, how was it possible to have a copy of the work in *Saṁvats 1473 and 1476*? Bühler explains away this anachronism by remarking that "the dates refer no doubt to the *Śaka* era".

As already pointed out, another MS. of the work (No. 415 of 1887-91) which was discovered by Dr. R. G. Bhandarkar bears the date *Saṁvat 1442*. This date again conflicts with *Saṁvat 1513* of Bühler. We cannot go on calling this *Saṁvat* date as having any reference to the *Śaka* era.

The correct date of the work is, therefore, *Saṁvat 1353* and this is in harmony with the dates of the MSS. available as will be seen from the following table :—

		Saṁvat	A.D.
1.	Date of composition	1353	1297
2.	Date of MS. No. 415 of 1887-91 ..	1442	1386
3.	Dates of MS. No. 16 of 1874-75 ..	1473	1417
		1476	1420

* Report on Sanskrit MSS. (1874-75), page 8 (note on MS. No. 16).

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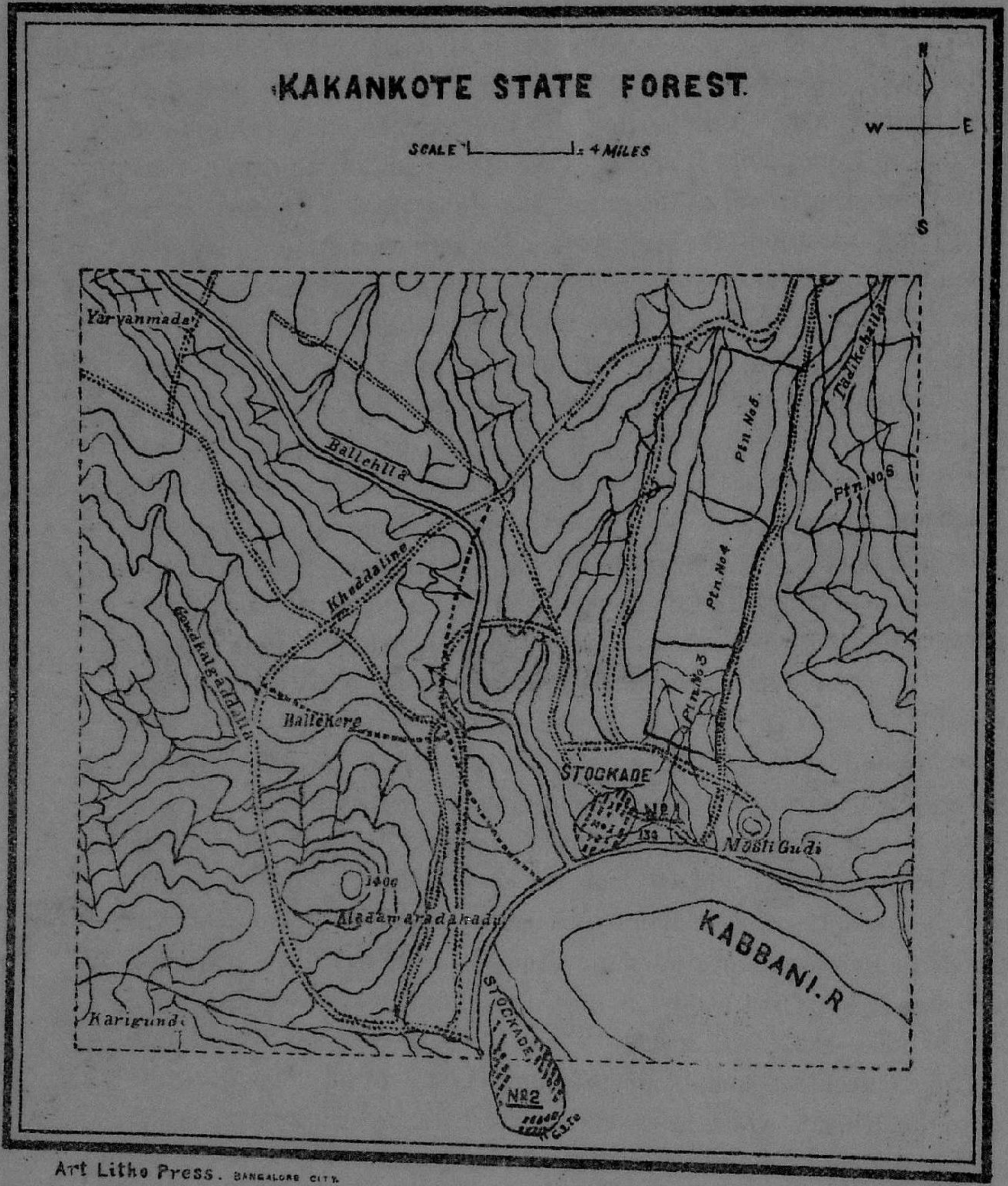

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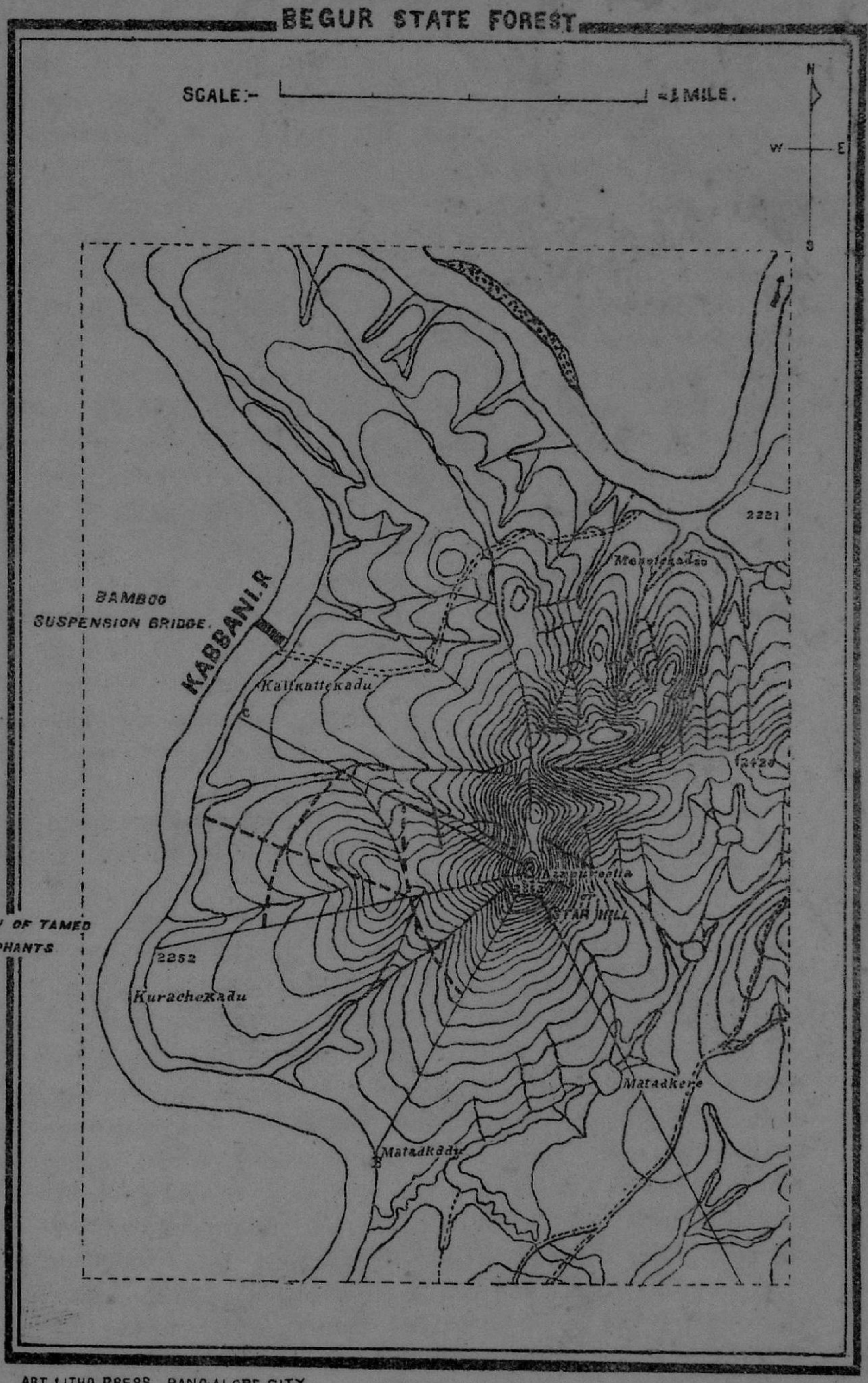

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